



Grey
Wooded
Forage
Association

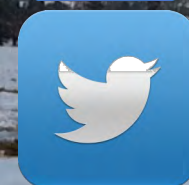
The Blade

"Creating an Awareness of Forages"



FEB / MAR 2016

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GWFA Staff Photo

MISSION STATEMENT

To promote environmentally and economically sustainable forage and agricultural practices.

VISION STATEMENT

The community is engaged in regenerative agricultural production methods.

Message from the Chair

By Ken Ziegler

Hello everyone. Welcome to our February / March "Blade". We hope you're all wintering well and that the mild temperatures has given you a reprieve from previous winters that have been quite harsh.

By now most of you will have cows with rather large bellies and their nutrient requirements rising by the week as they get closer to calving. Hopefully with the mild winter so far, you've been able to use up some poor quality feeds and have stretched feed supplies more than most other years.

Staff has been pounding hard in accumulating good content for this newsletter. Thanks again for their continued hard work as they've worked to bring you a good reading experience.

Also, a thank you is in order to Ted and Deb who have been chairing the Publicity and Projects committees. My sense is that the Board members have risen to the call and we're coming up with some really cool events and projects.



Look forward to our Annual meeting coming up on Saturday, April 30th. Ted and his crew have come up with a strong slate of speakers that we think you'll find interesting and valuable pertaining to managing our land in a healthy, environmentally sustainable way.

One task on the near horizon is the inviting of members to join the board. This is an exciting part of our job and we look forwards to a new set of board members replacing the set that "just came on" a mere three years ago. If you, or someone you know would make a good addition to the board, let us know and we'll add you to the list as possibilities. Give this some thought.

Once again, thank you for your interest in the mandate of the Grey Wooded Forage Association. We endeavor to continue serving your forage production interests well. Best wishes for the remainder of this winter as the days continue to get longer and the sun a wee bit stronger.

Ken



Is your annual compensation review coming this year?
It is time to start planning.

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Manager's Notes:

By Ginette Boucher, Manager



Greetings all,

I would like to inform you that Albert hasn't been feeling well all fall and his condition is worsening. Currently he's on medical disability and we are unsure when he will be returning to work. Please pray for Albert. Forward any correspondence to me at gwfa3@telus.net or contact me at 403-844-2645. We are looking to fill a temporary part time position for the time being until further notice.

We have been reviewing our member services and we are looking at ways to continually increase value. In the coming months we will provide the outcomes of this review. If you have some thoughts to share with us regarding additional services you would appreciate or benefit from please be sure to share those thoughts with us.

We received 10% response to the need assessment survey that circulated in the last couple of months. We are currently compiling the information and will share the outcomes soon.

We have been exploring alternate ways of delivering our program with the limited funds and the uncertainty of budget. I have been networking and building a pool of resources that we can tap into and develop a strong portfolio of partners / consultants to diversify and assist us in our program delivery.

We are expanding our program to include the delivery of the EFP (Environmental Farm Plan). There is some training scheduled for staff in the coming months. Once we are up to speed on this service we will offer this service and make an announcement in the Blade.

We are in the midst of making some capital purchases. Some items include a new printer for the Blade, computers and related office equipment; a secan which will be located east of our office in the foothills livestock coop parking lot; this will considerably reduce our annual storage expenses. We will include a list of the capital expenditures in our AGM package.

Our two day Extended Grazing Workshop /Tour with Lacombe Research Centre event was very successful; we learned many extended grazing methods to reduce costs of overwintering our animals as well we learned the importance of animal nutrition. On page four / five of this publication is a very informative article written by Katie Wyering of the tour and workshop so be sure to take a moment and read it. Thanks Katie for providing this article. We would also like to extend a thankyou to the Beef Cattle Research Council who funded this event, as well as our sponsors; Sundog Solar, Hannas Seeds, Frost Free Nosepumps and Cattle Canada Ltd. Many thanks to the committee members, the producers, the attendees, the speakers and all those who contributed. On our website under the events tab there is events proceedings. As I am able I will continue to update our website with pertinent information, be sure to forward any content you feel valuable.

We are in the midst of planning a combination Seminar & AGM which is scheduled for Saturday April 30th, and you won't want to miss it. On page 6 you will find more details. We will have a silent auction this year as a result of last year success. We are looking for silent auction items, should you have any items you would like to donate for this event it would be greatly appreciated.

Best regards,

Ginette



Extended Grazing Tour Summary February 17th

The Extended Grazing Workshop in Lacombe was an excellent opportunity for producers and industry leaders to explore the benefits and challenges of various extended grazing practices as well as areas that need further research and discussion. The first day of this two day conference involved tours of different winter grazing systems, starting with corn grazing at Murray Abel's farm.

Corn grazing works well on his farm as it remains profitable while meeting the nutritional requirements of his cattle during the winter. Some



benefits of corn include superior standability even in heavy snow and high levels of biomass produced, but cattle must be moved often to reduce waste and acidosis from preferential grazing of cobs only. Demonstrations of 3-D fencing and winter watering systems were



also included in this tour as additional tools that producers can utilize. Bale grazing at the Skeel's farm near Rocky Mountain House was next, a

system that has been used by these producers for the last few years as it reduces labor and machinery inputs that requires minimal management. This farm's grazing system is part of an Ag Canada research project that looks at environmental impacts and nutrient distribution as a result of bale grazing. Other highlights from this stop include solar panel water drinkers produced by Sundog Solar and Grey Wooded Forage winter-hardy alfalfa trials.



We got to see another example of a Sundog Solar watering system at the Ziola farm, the first of the afternoon tours, which also included some new innova-

tions in extended grazing practices. The family uses a Brassica crop in a mixture with oats for swath grazing their cattle over winter, which retains moisture and its green color, with excellent palatability. In addition to this new swath grazing system, stockpiled forages are used, consisting of various mixtures of cicer milkvetch, alfalfa, sainfoin and

other grasses. The final tour of the day was to the Lacombe Research Center to see the Ag Canada swath grazing projects conducted by Dr.

Vern Baron. Several crop varieties of barley, triticale and corn are studied at both high and low fertility levels, with stocking



density determined based on yield and expected number of grazing days. This research is being conducted to determine the cultivars that are best suited to swath grazing using cattle at different stages of maturity, assessing their performance and condition throughout the winter.



Extended Grazing Workshop Summary Feb 18th

Day two of the conference was split up into short sessions covering a range of topics from some of the top experts in the industry from across Western Canada. Starting the morning off, Dr. Greg Penner from



the University of Saskatchewan taught us about balancing the diet of gestating cows during the winter season. During the beginning of the extended grazing season, from about October to December, nutritional requirements of cattle

calving in April are fairly low, while forage quality is fairly high. Over the winter season quality and yield decrease, making it a challenge to meet the higher energy and protein requirements of cows in their third trimester near the end of the extended grazing season. Adding an economic perspective to the winter feeding equation, Kathy Larson from the Western Beef Development Center discussed how winter feeding and bedding can make up 50% or more of a producer's costs. Therefore a producer often focuses on how to reduce winter feeding costs, and extending the grazing season is a viable way to manage those costs as many studies have found that most forms of winter grazing are cheaper than traditional drylot systems.

Advocating for the environmental benefits of extended grazing, particularly bale grazing and bale processing, Dr. Jeff Schoenau from the University of Saskatchewan brought his knowledge of soil science to the discussion. In terms of soil health, in-field feeding has by far the greatest impacts as importing nutrients in the form of both residual feed and manure produced by wintering cattle adds the greatest amounts of nitrogen and phosphorus to the field. Even spread of forages and rotating fields from year to year allow the benefits to be spread more evenly over a greater amount of land. While there are many advantages of bale grazing and processing, Dr. Don Flaten warned of some of the potential drawbacks from these type of grazing systems. The University of Manitoba professor has studied the effects increased levels of nitrogen, and particularly phosphorus from bale grazing have on the quality of nearby water bodies. In order to mitigate these risks, farmers can employ Beneficial Management Practices (BMPs) that include placement of feeding sites to reduce the amount of run-off, rotating feeding sites and

even using retention/collection areas.

The final two talks of the day were presented by local experts from the Lacombe Research Center who are involved in some of the most innovative research on forage production and swath grazing systems. Dr. Pat Juskiw discussed her work in breeding cereal crops such as barley and triticale with regards to forage use. Some of the difficulties with breeding varieties for forage use include how to quantify forage quality for selection and improvement, as well as the challenges of having different requirements of forage crops at different times of the year and stages of animal growth. These factors in combination with the limited resources and funding dedicated to forage research and breeding programs means that producers have fewer cultivars to choose from when it comes to extended grazing. However, some of these challenges can be overcome with agronomics and different management techniques, as Dr. Vern Baron's research has examined. Some of the management tools producers can include in their own systems are the use of more than one type of crop and grazing system, different harvest timing or planting date, and manipulation of the tradeoff between yield and quality based on the specific goals of the producer. To facilitate further dialogue, Dr. Hushton Block, Linda Hunt and Trevor Wallace summarized the day's proceedings and gathered and answered questions from the audience. Participant engagement and discussion, as well as the high quality of the speakers and the information they relayed all contributed to an exceptional conference that could lead to further discussion and opportunities to be examined regarding the future of forage production in Western Canada.



Written by
Katie Wyering



Grey Wooded Forage Association

"Treating an Awareness of Forages"

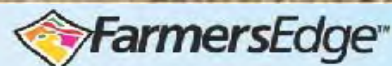
32nd Grey Wooded Forage Association Seminar and Annual Meeting Healthy Land...Healthy Futures

A review of programs available to fulfill our values
Saturday, April 30th 2016, Eckville Community Centre
1:00-7:00Pm



Big Deal Galloways

Workshop on April 7, 2016



Salinity Causes & Cures

Coburn Hall

9AM - 1PM (includes lunch)

**How forage production improves soil salinity,
forage establishment & seed options**

**Register Free Online: <https://soilssalinitycausescures.eventbrite.ca>
Registration Deadline: April 4, 2016**

**For More Information Contact:
Carrie Mabin, Mountain View County, 403-335-3311 ext 204
or via email at cmabin@mvcounty.com**



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Grey Wooded Forage Association

"Treating an Awareness of Forages"

Controlled Grazing – Performance Data

Data shows nearly 50% forage performance increase using controlled grazing vs. conventional open grazing!



Photo credit Mark Burggren

I live on a quarter section south of Condor with 135 acres of grassland for which I rent out my services as a grazer each summer. I started practicing controlled grazing – moderately high animal impact followed by 60 days of rest – about 6 years ago following a pasture walk and learning event with Albert Kuipers here on my place. We now have 28 paddocks of varying sizes fenced off with electric fencing and step-in posts configured roughly in a “spoke” layout around a central waterer and distributor pen “hub”.

Last October 31st I had a conversation with my cattle owner customer after he had loaded out the last cows to head back to his winter quarters, about whether there was any advantage from his perspective from the controlled grazing system I am using. He summers cattle in a lot of different locations, with me being the only one who handles them this way. His answer gave me the first definitive data on the subject, leading me to share the information with other GWFA members.

He said, “Good heavens yes, Mark. I doubt there is another quarter in the region that earns as much as you do, because I can put more cattle on your place and leave them for longer than anywhere else I rent. For the last two years we’ve had 46 pairs and a bull with you, while the most I can put on any other quarter I rent is 35 pairs plus a bull. And remember, I brought the cattle to you a week before anybody else and took them off 1 ½ weeks later because you still had the grass

for them, even though we had a very dry start to the season”. As a side note, because of the drought conditions in the spring I moved the cattle more quickly through the paddocks until the rains and spring flush came in July, to avoid over-stressing the grass.

Here are the numbers resulting from his information:

B-X Quarter

Cow/calf pairs – 155 days x 46 pairs = 7130 animal unit days

Bull – 80 days x 1 = 80 animal unit days

Total - 7210 animal unit days per quarter per grazing season.

Conventional Quarter

Cow/calf pairs – 137 days x 35 pairs = 4795 animal unit days

Bull – 73 days x 1 = 73 animal unit days

Total - 4868 animal unit days per quarter per grazing season.

This would imply a forage productivity improvement of $7210/4868 = 1.481$ or approximately 48% using controlled grazing due to the rest and rejuvenation the grass enjoys between grazing conditions simulating the conditions under which grass genetics were developed over centuries of large herd action. I’m using 50% improvement in the header because next year I’m going to request 50 pairs since I have the grass for them.

I should keep track some summer, but I estimate the controlled grazing requires about 100 hours of care repairing electric fencing in the spring and leading the cattle to a fresh paddock every 2 or 3 days. So I’m probably earning an extra \$20 or so per hour of my time to ride my quad in the sunshine, watch the cows eat and get exercise occasionally repairing the electric fence.

“I’m total sold on the concept of controlled grazing!”

Mark Burggren

B-X Grazer



Photo credit Mark Burggren

For sale approximately 195 plastic wrapped 4'x5' barley silage bales processed by Krone silage maker. The barley was on breaking so has some alfalfa & grasses in it. Moisture content is below 40%, bales weigh about 1500 pounds. Located in Sylvan Lake area. Price negotiable, **403-357-9831**.

Comparing Oats, Barley and Wheat for Cattle Rations

Reducing feed costs for wintering cows is an objective that pays huge dividends. Dr. Harlan Hughes calculated a while back that every \$1 that you save in winter feed costs, the net profit for the operation increases by \$2.48.

High hay prices have resulted in some producers changing to a straw grain ration prior to calving. This is a good option. By feeding straw and grain pre-calving it is possible to save roughly \$350 compared to feeding hay throughout the entire winter.

The question then becomes: Is it cheaper to feed oats or barley to the cows? Some of the items to consider are price and nutrient content of the grains. The table below lists the prices from the week of January 11, 2016 and the nutrient content of the feeds.

| Grain | Cost / Tonne (\$ bushel) | Pounds TDN | Kg Protein | TDN | Protein |
|-------------|--------------------------|------------|------------|--------|---------|
| Barley | \$ 210 (\$ 4.57) | 1620 | 109.7 | 83.1 % | 12.4 % |
| Oats | \$ 185 (\$ 3.02) | 1513 | 101.9 | 76.1 % | 11.3 % |
| Wheat | \$ 230 (\$ 6.26) | 1727 | 137.5 | 88.9 % | 15.6 % |
| Canola meal | \$ 454 | 1418 | 351.9 | 70.0 % | 38.3 % |

What is the price differential needed to replace barley with oats in a ration, or vice versa? On average, barley contains 7 to 10% more protein and 7 to 10% more energy on a pound for pound basis compared to oats. So, if there are 6 pounds of barley in the ration, it would be necessary to feed 6.6 pounds of oats to get the same amount of nutrients into the animal.

If you look at it on a per tonne basis, to replace 2204 pounds of barley, it would be necessary to feed 2352 pounds of oats to get the same amount of energy and an additional 6 pounds of canola meal to match protein levels. To have the same cost for feeding, oat needs to be \$1.50 per bushel less expensive than barley to be cost effective for nutrient content.

There are a few other considerations that need to be made before making the switch based on price alone. If feeding whole grains to calves under 700 pounds, there is no need to process the grain. The calves will do a good job of chewing and break the kernels so they are digested. For animals over 700 pounds (including cows) the animals tend to "gulp" their food and do not chew as much. Whole oats to larger animals

results in a 5 to 7% reduction in digestive efficiency. Barley on the other hand has a 10 to 15% reduction in digestive efficiency when fed whole. This factor needs to be brought into the price differential discussion.

Economically, if it is costing more than 15% of the price for barley or 7% of the price of oats to process the grain, it may be beneficial to feed extra grain and be money ahead in the long run.

Changing from oats to barley in a ration should be done gradually. Start with 25% barley in the mix for 3 to 4 days, and then increase the barley by 25% every 3 to 4 days. If all goes well, in 16 days the animals can be on 100% barley.

Changing to feed wheat has different limitations. Wheat must be cracked into 2 pieces (no finer than this) when feed to larger cattle. If it is fed whole, digestive efficiency is reduced by 25%. Wheat is digested faster than oats or barley which increases the risks of bloat or acidosis. Maximum feeding limits for wheat is 3 pounds per head per day for calves and 6 pounds a day for mature cows. If switching to wheat, a gradual introduction into the ration is necessary. It is advisable to include an ionophore into the ration when feeding wheat.

When making the changes from one grain to another, there are two things to watch for:

1. **Feed refusal** - If feed consumption declines after a change, it may be an indication that the rumen is not functioning properly.
2. **Watch the consistency of the manure** - If the manure becomes loose and watery, this is another indicator there are digestive problems.

If either of these two problems occur, reduce the total amount of grain fed or go back to the previous mix of grain until the problems dissipate.

SO1 oats are high fat – equal energy to barley.

Price differential per bushel \$1.50 between oats and barley

Barry Yaremicio,

Beef / Forage Specialist, Alberta Ag-Info Centre



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Third Step of Cover Cropping

Cover Crop Species Selection

Once goals and seeding details are addressed, now the species and blend composition can be addressed.

Without the goal setting, seeding a cover crop will give results, but they may not be the desired outcomes.

Grasses are the species that produces high volumes and potentially higher carbon capture. Most grasses have a fibrous root system, which is one of the keys to building organic matter.

As grass plants mature, their carbon:nitrogen ratio starts to widen, and the plant produces lignin. The wider carbon:nitrogen ratio and increased lignin slows the rotting process, feeding fungi populations. Tight carbon:nitrogen residues rot quicker and feeds predominantly bacteria, which recycles nutrients quickly.

Warm season grasses like millets, sorghum sudan, and corn, grow quickest when nighttime temperatures are over 12° C. Cool season grasses like oat, barley, winter triticale, annual ryegrass, grow early in the year when daytime temperatures are cooler.

Grasses are nitrogen sinks, meaning their growth is regulated by how much nitrogen is available. They are good at erosion control because of their fibrous root system. Grass roots are a good host for mycorrhizae fungi, which acts as root extensions, allowing more nutrients to flow into the plant.

Legumes are the species that are used primarily to fix nitrogen when properly inoculated and boost protein in the stand. When associated with grasses in a mix, they can develop mycorrhizal association, where it shares fixed nitrogen with other mycorrhizal plants in exchange for other nutrients like phosphate.

Legume root systems vary from tap root to fibrous. Above ground plant material will have a tight carbon:nitrogen ratio, meaning most of the top growth will have relatively high protein. Legumes have a higher requirement of phosphate and potassium than grasses. Warm season legumes include crops like cow peas, soybeans, chickling vetch, and chickpeas. Cool season legumes include peas, clovers, alfalfa, hairy vetch, faba bean, and fenugreek. A mix with high amount of legumes can fix a large amount of nitrogen for following crops.

Broadleaf plants are a large and diverse category of plants. They vary in the degree of mycorrhizal forming, nutrient scavenging, hardpan breaking, weed smothering, carbon:nitrogen ratios and organic matter forming.



Tillage Radish seeded from airplane into stubble

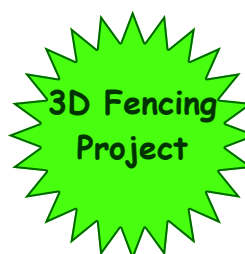
Brassica species are the most recognizable in the group. As a group they vary with mycorrhizal fungi relationships. Root systems vary as much as the group, ranging from tap to fibrous. Carbon:nitrogen ratios vary from crop to crop. Cool season species include radish, turnip, hybrid brassicas, sugar beet, phacelia, buckwheat, kale, forage rape, and plantain. Warm season broadleaf crops include chicory, sunflowers, safflower, and okra.

Tillage Radish® has been at the focal point of the recent rebirth of cover crops in North America. They are easy to grow and establish, fast growing, visual at what they are doing, and easy to terminate. They are a “cover crop with training wheels”. Once producers find a spot for cover crops in their rotation, then they start adding other species to accomplish other goals.

Now that the species have been picked, now the next step is balancing the blend to match the goals.



Seeding Tillage Radish with an airplane



Fourth Step of Cover Cropping

Getting Ready for Seeding

Once the species are picked, what rate do we need to seed at? Maybe the other steps are easier than this one. ??

It sounds more intimidating than it actually is. The end goal is to have slightly higher plant stand than a monoculture, but increase diversity. The species selection will be influenced by the last crop, next crop, soil issues, length of term of the cover crop, how it is going to be seeded and end use of the cover crop.

If multiple cuts, grazing, or cutting and grazing is required, then species that re-grow are important. Stockpiling feed, nitrogen fixing, weed smothering species will be quick growing and later maturing. Seeding density will depend on how much "abuse" it has to put up with. A blend intended to be grazed, will have higher mortality, so seeding rates need to be bumped up. Total seed densities in general will be slightly higher than monocultures.

A relay crop is a cover crop that will grow after the cash crop is harvested. In this scenario, the cash crop will be seeded at a slightly lower rate and the relay crop will be seeded into it. The relay crop will utilize species that tolerate shading, and some fall frost tolerance to maximize the time the cover crop has to grow. A cash crop seeded at full rate will potentially



Photo credit Kevin Elmy

Broadcasting seed into a standing crop with a sprayer

choke out the relay crop growing underneath, so the reduced plant stand is critical.

Normally, cereal crops will be seeded at 20 to 35 plants per square foot, depending on soil texture, soil fertility, and growing season moisture. Higher yield potentials require higher seeding density. Adding a relay crop into it needs to have a lower plant density of the cash crop, but will be adding more seeds per square foot, ending higher than the optimal cash crop seed density. Seedlings under the cash crop will experience higher than normal mortality rates due to the competition, but some will survive.



Broadcasting seed results in higher seedling mortality, but is one of the only ways to seed into an established crop without severe damage to the crop. Germination will require a rain or shower, depending on the seed size. Drilling the seed into the ground results in higher establishment of plants, but can result in drying of the soil. Seeding a late summer, or fall crop after harvest will reduce the number of days the cover crop will have to grow. *Decisions, decisions...*

In the end, the plan is to get plants growing throughout the growing season. Proper seed density to keep the ground covered is crucial. When using a relay crop strategy one has to have the cash crop high enough, but thin enough for the relay crop to survive. Or to delay seeding until the cash crop starts to drop leaves to allow more sunlight into the canopy to allow the relay crop to flourish.

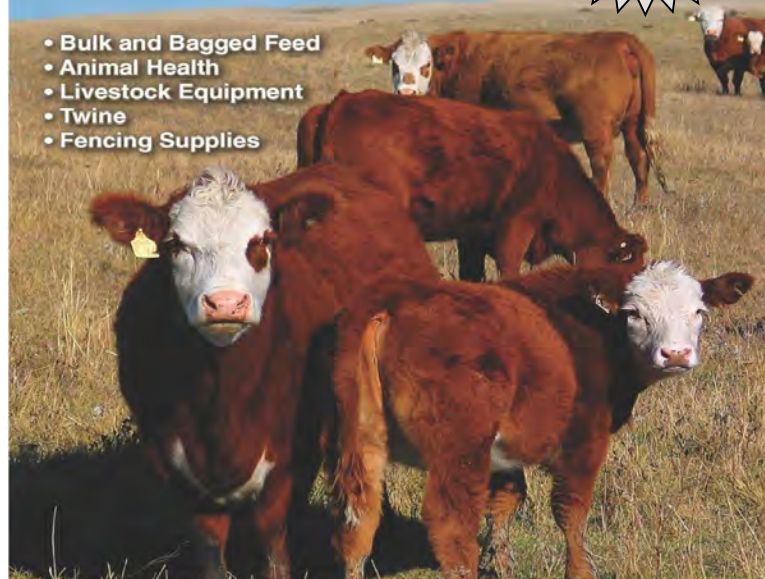
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Condensed Tannins in Legume Forage, A Win-Win for Livestock, Soil and the Environment

GWFA Staff Photo

Some of Dr. Surya Acharya's sainfoin/alfalfa research plots at the Lethbridge Research centre

Common dewormers products producers are currently using such as the “clear dewormers” (Ivomec, Dectomax, Cydectin, Cylence) or “white dewormers” (Safeguard, Valbazen) are increasingly becoming ineffective for intestinal parasites, as is the trend with antibiotics and bacteria. Even worse news is the fact that we are extremely limited for future pharmaceutical options from what is currently available. Pharmaceutical companies may change the formulation or duration of activity of the dewormer but in the end, resistance can and will inevitably develop. In Australia and New Zealand, it is common to use combination products that have a mixture of a white and a clear dewormer plus possibly a third type and sometimes fourth type. Currently there are no such products commercially available in Canada. These combination products will ideally slow resistance development but not stop it. Such practise is comparable to using two antibiotics at the same time hoping that if one does not kill the bug, the other will.

We are seeing resistance in all types of gastrointestinal worms across all species, cows, horses, sheep and most especially goats. The problem is particularly bad in warmer, moister areas such as the southern and eastern states where worm infections are a year round problem and as a result animals need to be dewormed more often. As we increase the frequency of use of dewormers, the faster resistance will develop in the intestinal worms we are targeting. The same principle applies to antibiotics. If we only use antibiotics when we absolutely need to, the products we have at our disposal would remain effective for killing bacteria for many more years. Overuse of penicillin has rendered it nearly useless in human medicine and overuse of the latest macrolide antibiotics such as Draxxin, or Zuprevo in feedlots and on farms is resulting in increasing resistance to those drugs in cattle populations across North America.

Luckily for all you keen grass people out there, there is a way to not only improve you pasture diversity, but also reduce pasture bloat and reduce your reliance on deworming products. Studies from New Zealand in the 90's identified that sheep grazing forages containing condensed tannins (CT) had significantly reduced intestinal parasitism and thus higher productivity and health. It has long been known that CT containing forages help reduce pasture bloat. Thus planting such forages alongside high quality, however with bloat potential, forage species like alfalfa can allow producers to graze livestock on high alfalfa containing pastures with reduced risk of bloat.

Almost all plants produce condensed tannins to some extent, and the tannins themselves vary in size and structure from one plant species to the next. On the negative side condensed tannins can reduce feed intake and decrease nutrient

utilization if found in too high of concentration in a forage.

Many legume species have considerable levels of condensed tannins. The variability of size and structure, results in some forages containing a CT variety that may be more effective at reducing bloat or preventing intestinal parasitism as compared to another forage species.

Condensed tannins have also been shown to increase protein utilization by increasing “by-pass protein” and thus improve animal productivity. The CT molecules bind with plant proteins rendering them unavailable to bacteria in the rumen. The protein-condensed tannin complex then passes into the abomasum and intestines, dissociates in the lower pH of the abomasum and the ruminant can absorb the protein for its' own use. Other recent studies have found that condensed tannins from purple prairie clover and white clover can have antibacterial effects on E. Coli O157 and others have shown condensed tannins being able reduce the activity of methane producing bacteria in the rumen. Research has also shown that nitrogen excretion is reduced in urine output in ruminants and shifted towards fecal output. This is important for soil health as the nitrogen excreted in urine is aerosolized off as ammonia whereas the nitrogen in feces can be recycled into the soil.

Around the world there are lots of different forage and shrub species that are being evaluated for their tannin content and feed quality. In the prairies the most likely sources of condensed tannins for us will be found in sainfoin, purple prairie clover or white clover and birdsfoot trefoil. Historically, sainfoin lost favor as it had poor stand longevity, but that recently changed when Surya Acharya of Agriculture Canada in Lethbridge developed AC Mountainview which shows much improved stand longevity and good productivity when planted alongside alfalfa. Currently Ag Canada is still performing grazing studies on AC Mountainview seeded with various other forages. Another potential option that has been evaluated is adding CT solutions to watering systems. →



GWFA Staff Photo

A 30+ year old stand of alfalfa and sainfoin

Purple prairie clover has even higher levels of condensed tannins than sainfoin but the stage of growth that the tannins are found at varies. With Sainfoin, condensed tannins are found in highest concentrations when the plant is in the vegetative growth stage whereas with purple prairie clover, levels are highest when the plant is in the flowering stage. A Canadian study from a few years ago ([http://www1.foragebeef.ca/\\$Foragebeef/frgebeef.nsf/all/frg103/\\$FILE/specieslegumestannins.pdf](http://www1.foragebeef.ca/$Foragebeef/frgebeef.nsf/all/frg103/$FILE/specieslegumestannins.pdf)) measured the concentrations of condensed tannins in sainfoin, purple prairie clover, white clover and a few other species at various stages of growth, in different plant parts (seed, flower, leaf, stem etc). It was concluded that the concentration of CT molecules decreases in sainfoin as the plant matures beyond the vegetative stage, however there was still enough CT molecules to provide an anti-bloat effect if grazed or harvested in the mature stage. Thus, to achieve optimal condensed tannin concentrations, the forage needs to be grazed at a particular time. To balance forage volume with nutritive value and CT concentration, Agriculture Canada researchers recommend harvesting or grazing sainfoin between the bud to flowering stage. Another nice thing about condensed tannins is that their biological activity is maintained when in a harvested state. European studies generally have found that sainfoin can be very effectively ensiled and the available protein content is only minimally affected by the ensiling process, however the CT molecules are better preserved if the forage is harvested as hay. Birdsfoot trefoil does have appreciable levels of CT molecules as well but not as high as what would be found in sainfoin, or the two studied clover species.

To date, it has yet to be fully elucidated exactly how CT containing forages are able to detrimentally affect parasite populations. Three major pathways have been identified so far. The first is a reduction in infective larvae in the host ruminant, thus reducing parasitism and improving animal performance. The second is a reduced fecal shedding of parasites eggs, either due to lower numbers of adult worms in the intestines or reduced fertility of female worms or both. The third is a reduction in the ability of eggs to mature to infective larvae on pasture (ruminants consume infective larvae on pasture that then mature to adult worms in the intestines. Adult worms then shed eggs again onto pasture that develop into larvae). The latter two points greatly contribute to a reduction of pasture contamination with infective larvae. Normally most parasites can shed hundreds to thousands of eggs a day, if this number can be reduced, that is great news for young animals whose weaker immature immune systems cannot cope with parasites the way adults can. The ability of different CT forages to reduce parasite viability varies between parasite species, some being more affected than others. Research is still needed to better quantify the reduction of parasite loads and improvement in live weight gains of both cattle and sheep in Western Canada.

If you raise sheep or goats, you hopefully are already fully aware how detrimental parasites can be to your young animals. The results are very apparent being scours, anemia and death. Parasitism in cattle goes mostly unnoticed in young

stock but the effects can be significant. Many producers who are currently using fenbedazole on pasture feel that their weaning weights have been higher and their reproduction rates are better than ever. The increased breeding performance can be explained by the fact that an animal relatively free of parasitism is healthier and thus cycles better. Unfortunately, there is resistance to fenbedazole already in parts of North America, including here in Alberta in sheep and goat parasites and cattle are not far behind.

With an ever increasing demand from our society to utilize more environmentally friendly practises and rely less on pharmaceutical inputs, the new variety of sainfoin is something that we can use to help us meet the demands of our consumers. Truly the benefits to our livestock's health, the improved health of the soil and the reduction in methane and ammonia emissions should be enough to encourage us all to consider trying out and more forage that have condensed tannins. So do yourself a huge favor and consider increasing your pasture diversity (which in itself has countless benefits) by adding some sainfoin to the mix. I am sure excited to put it to use on my pastures and hopefully minimize my use of deworming products.

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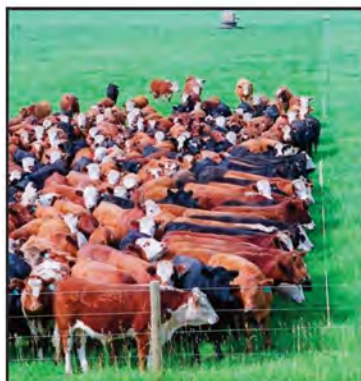
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From the Parkland to the Savanna

The title maybe sounds like we moved to Africa, but of course we only moved to Belmont, Manitoba! The area of South West Manitoba we live in is classified as "oak savanna" as opposed to the aspen parkland of Central Alberta. The oak savanna was grassland lightly forested with Bur oaks and at one time formed a swathe from southern Manitoba/Ontario all the way to Texas. It marks the transitional zone between the arid plains/prairie to the west and the wetter, broad-leaved ecosystems of the east. Most of the trees were cleared however to create the modern agricultural heartland of the Midwest.

Whilst much of southern Manitoba is flat and treeless, we settled in an area of rolling countryside close to Pelican Lake where there are still plenty of trees, sloughs and potholes. In my opinion this is an area better suited to ranching than crop farming with big modern machinery. Most of our neighbors, however, are large scale grain farmers growing wheat, canola, soya beans and corn. The oak savanna ecosystem zone is characterized by a huge diversity of warm and cool season plants and trees. We have a wide range of wildlife too - garter snakes, salamanders, turtles, vultures, wild turkeys, raccoons and elk to name a few that were new to me.

Winters here are typically a few degrees colder than Central Alberta but with the wind frequently blowing, windchill is more of a factor. Summers are substantially different with considerably more heat and humidity. We can expect weeks of 30C+ temperatures through July and August although last year our hottest day was actually in early September when we hit 36C (40C with humidex) on a very windy day!

Our growing season will be longer here as it warms up quicker in the spring given that we are so far south (only 25 miles north of the US border). Surprisingly first fall frost dates are similar to Central Alberta.

We are still working out what our "natural advantage" is in terms of low cost cattle wintering as this will determine our overall profitability. Thus far the most promising system looks to be grazing corn supplemented by alfalfa hay and

straw. With 2350 Corn Heat Units we have enough heat to grow corn well, but the biggest potential limitation will be soil moisture. Averaging an inch less annual precipitation than Rimbey, this area is not the wet, flood prone land that many associate with Manitoba.

Banked grass won't play the major role it did for us at Rimbey as the grass lignifies badly through the fall with the heat and wind. I still plan on banking enough to calve the cows on but banking for winter grazing would not work well here. From early experience alfalfa and sweet clover are two species that do very well here, likely due to having soil ph levels of around 8. Hopefully utilizing alfalfa in a controlled grazing situation will allow us to increase the soil fertility and productivity more quickly than was possible in a more acidic environment. We spent the first summer setting up the fence and watering infrastructure that will allow us to manage the land the way we learnt to with the GWFA in Alberta. I am looking forward to my first full growing season in Manitoba and hope that you enjoy a productive one out west.

Iain Aitken

All photos on this page by Iain Aitken



A pasture seed out being cut for silage (10 weeks after seeding)



Some of the diverse species of native plants: birds foot trefoil, showy milkweed, American licorice etc.



Cows in the oak bush



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