Forage Country

SUMMER 2013

SPECIAL POINTS OF INTEREST:

- Update on PCBFA Projects & Extension for the Year
- Research Articles
- Tour Ads

THIS ISSUE:

Native Grasslands in the Peace Region

by Taylor Iwasiuk

Native rangeland is one of the greatest resources of the Prairie Provinces. These grasses offer plant diversity and are adaptable to local soil and climate conditions, therefore are more resilient to pest and drought conditions than non-native or cool-grass species. For these reasons they provide an excellent nutritional forage for livestock during the summer months. Sadly, native grasses have been deteriorating, because of different management mistakes, especially in the Peace Country of Alberta where they are only found in the Peace River and Foothills Parklands, Kleskun Hills and on south facing slopes of the Peace River Valley. It is important that livestock producers make an effort in increasing native prairie in their area because these pastures are far more economical to manage, especially during those warm-season months when cool-grass species are dormant.

Drier sites where the water table falls below soil surface are most often dominated by Willow and Marsh Reed grasses. Flooded land around rivers and streams will find more Veiny Meadow Rue, Cow Parsnip, and Wet Sedge Meadow. South facing slopes in the Peace Country contain some California Oat grass, Parry Oat grass and Bearberry Juniper. Sites dominated by shrubs will find lots of Veiny Meadow Rue and Tufted Hair grass prairie while deciduous areas contain a lot of Marsh Reed grass. Some other common native grasses in the Peace are Western Porcupine grass, bearded wheat grass, needle grass, hairy vetch, slender wheat grass and rough fescue grasses. Most native prairie left is found in areas with thick forest cover or a steep slope, which generally cannot be utilized because of its limited access. (Public Lands Research)

Ranchers can use *Conservation Grazing* as a management practice to increase and sustain biodiversity on native prairie in Canada. Prolonged heavy grazing of these rangelands generally reduces the cover of native grass and forb species and allows Kentucky bluegrass, timothy and clover to dominate the site. Livestock can graze native ranges while continuing the process of prairie maintenance, as long as grazing regimes are being met. Stocking rates, timing of grazing, and rotational grazing are all practices that should be considered to manage native grasslands, while still improving production of your livestock.

Peace Country Beef & Forage Association

" Forages & Beef; Partners in Profits"

Locations

Fairview Campus, Animal Sciences Building

780-835-6799

High Prairie Provincial Building

AARD/AFSC Office

780-523-4033

" Whole-Farm Systems Analysis for Beef Cattle Production" and "Management of Environmental Responsibilities on Beef Cattle Operations"

The Peace Country Beef & Forage Association believes that the sustainability of rural communities in the Peace River region will be dependent upon a strong agricultural economy with livestock production as its foundation. Our goal is to improve the profitability and sustainability of the forage / beef industry in the Peace region through the transfer of leading edge forage and beef technology to producers, students, and industry representatives through innovative extension activities and initiatives. This will be accomplished by providing forage / beef producers with the management tools needed to manage their beef and forage operation as a unit, rather than individual components. To contribute towards sustaining this foundation, the Peace region beef industry will need to embody the following objectives:

- Create awareness of nutrients, nutrient distribution, collection and management on farm from wintering sites to pastures to crop land and to increase distribution and utilization of farm resources.
- Increase animal performance by enhancing utilization of feed stuffs through improved feeding strategies and better forage/feed selection.
- Improve management strategies of annual and perennial forage species.
- Improve livestock facilities and manure management operations that pose a significant risk to water quality.
- Enhance riparian function and condition through improved grazing management.
- Reduce environmental impact of livestock production/wintering systems and create an environmentally and economically sustainable beef cattle production system.

Project Line up for Summer 2013

1. New Forage Evaluation Plots—Spirit River & Valleyview
2. Livestock Seeding of Forages
3. Corn vs Barley Small Plot
4. Alternative Feed Resources: Oats Following Tillage Radish
5. Pasture Rejuvenation: Monitoring Pasture Quality Using Brix Measurements
6. Sainfoin/Alfalfa Mixture Trial
7. Improving Forage Production with Liquid Fertilizers & GSR Ca
8. Annual Forage Variety Trial for Silage
9. Standing vs Swath Grazing Corn
10. Triticale for Swath Grazing
11. Composting
12. Whole Farm Nutrient Management
13. Subsoiling for Pasture Rejuvenation
14. Forage Soybeans

Native Grasslands cont'd

Stocking Rate

Selection of the correct stocking rate and carrying capacity of livestock is most important to achieve ideal gains in your livestock, yet still manage your native pastures that allows for essential recovery after a grazing season. Overstocking will reduce the pastures productivity over time by decreasing the number of palatable plants because of less ability to absorb moisture and nutrients, while increasing the population of unpalatable species like forbs, weeds and non-native species. The recommended stocking rates for rangelands is moderate to light grazing. In an overgrazed situation, cattle will run short of pasture and typically grasses will be less than 2-3 cm tall, therefore livestock performance will be poor. Stocking rates and carrying capacity can be calculated using animal unit months (AUM). Native pastures generally do not offer as high of a carrying capacity, however have lower input costs.

Timing of Grazing

A popular rule of thumb is that turning your cows out to pasture just a single day too early in the spring can lose you up to three days grazing in the fall. It is suggested that 3 to 3 ½ leaves of growth be on all your plants in pastures before letting them out for the summer. This is just before the plant hits its seeding and flowering stage. Fall management is also critical in perennial grasses when plants are storing carbohydrates. Keeping your cattle on pasture too late can also delay spring growth if no fall period is given to store energy. Native prairie grasses can be utilized more effectively than cool-grassed species later in the summer because they are a warm-grass and do not become dormant during this time; however they have a shorter grazing season because they are not available as early in the spring.

Rotational Grazing

Rotational grazing can help to prevent the cover of native grasses and forbs to be dominated by other introduced tame forages. Rotational grazing is a system in which herds of livestock are systematically moved to fresh rested areas with the intent to maximize the quality and quantity of forage growth. This allows grazed land to rest and vegetate to renew energy reserves, rebuild shoot systems, and deepen root systems. This practice is also a great way to manage weeds and fully utilize areas in your pasture that your livestock often avoid. Rotational grazing makes use of a large number of paddocks. These animals rotate from paddock to paddock, so each piece of land goes through a short grazing period and a long rest period. Producers can meet the majority of their production needs by implementing an intensive rotational grazing system in their own farms and this can immensely help to fully utilize native pastures.

Guidelines for Setting On/Off Grazing Dates in NW Region:

Forested Rangelands
On June 15 // *Off* October 1

Native Grasslands
On June 7 // *Off* October 1

Tame Pasture
On June 1 // *Off* October 15

** Note: year to year is different, therefore use best management practices in each situation**

Growing Forward 2 - Now Accepting Applications!

by Karlah Rudolph

Growing Forward is a joint federal-provincial policy framework rolling out across the nation to support innovation, competitiveness and profitability in agriculture. In Alberta, the programming is tailored to support the needs of the industry, with the Province contributing 40% of the $406 million that will be invested in Alberta's agricultural producers and industry groups over the next 5 years. Growing Forward 2 came available on April 2nd of 2013 and is a continuation of the previous Growing Forward program with many opportunities for livestock producers and producer groups to improve their businesses and their bottom lines.

On-Farm Stewardship Program

Of all the programs relevant to livestock producers, the On-Farm Stewardship Program is perhaps the broadest, which seeks to improve farm impact on water quality in five categories. These categories are Grazing Management, Manure and Livestock Facilities Management, Improved Pest Management, Fuel and Used Oil Storage and Innovative Stewardship Solutions. Applicants must have completed an Environmental Farm Plan to be eligible. Depending on the activity, 30%, 50% or 70% of costs can be covered, to a maximum of $50,000 per applicant.

The *Grazing Management* category will assist producers with 70% of the costs of fencing riparian areas and riparian area management practices including purchasing and establishing trees, grass and legumes and carrying out weed control strategies. This category can cover 50% of the cost to purchase year-round or summer watering systems so that livestock water off-site and will assist with the purchase of surface, shallow or deeply trenched pipelines. This category will assist with the purchase of portable shelters and windbreaks to reduce manure build-up and distribute manure more evenly in field. It will also cover 70% of the costs related to wetland restoration, including earthworks, engineering consultant fees, re-vegetation and equipment use and labour.

The *Manure and Livestock Facilities Management* category will assist with 50% of the costs of earthworks, materials, supplies, labour and equipment required to develop improved manure storage facilities. It will provide assistance with the installation and upgrades to runoff control systems outside of livestock pens. Eligible projects may include retention and settling ponds, constructed wetlands, culverts and drainage tiles, windbreaks, snow fences and even eaves troughs as well as engineering fees. Finally, this program will cover 50% of the costs related to relocating a livestock facility and dismantling an existing one if it poses a risk to the watersheds.

The *Improved Pest Management* category will contribute 50% of the costs related to sprayer equipment modifications to reduce drift to non-target zones and crop and pest monitoring equipment, such as weather stations, that will assist producers with timely and targeted control. The *Fuel and Used-Oil Storage* category will contribute 30% of the cost of a double walled fuel tank and a double walled used oil storage tank. The applicant must provide proof that at least one old fuel tank has been decommissioned. Finally, the *Innovative Stewardship Solutions* category provides agricultural producers an opportunity to design and submit a unique project they believe will improve water quality on their operation. Each project will be assessed on an individual basis by a technical review panel.

On-Farm Water Management Program

A program that closely complements the On-Farm Stewardship Program is the On-Farm Water Management Program. Producers who complete a Long Term Water Management Plan are then eligible for one third of costs related to their on-farm water supply and management, to a maximum of $5,000 for standard incentive projects and 50% of an unspecific maximum for special incentive projects. Standard incentive projects include the construction of wells, dugouts, spring developments, dams and water pipelines in addition to off-site watering systems. There are size requirements for new or expanded water sources. Special incentive projects include well decommissioning, well pit conversions, purchasing water meters and water well depth measurement equipment and connecting to multi-user water supply pipelines.

Agri-Processing Automation and Efficiency Program – Livestock
This program assists livestock producers and meat processors to purchase new processing equipment and develop of improved processes and best practices in their businesses. Capital expenses can be covered up to 20% and include engineering designs and purchasing and installing new equipment. Non-capital expenses can be covered up to 50% and include consulting and engineering fees, consultant and coaching fees and training for employees such that new equipment can be used. The entire program can provide up to $50,000 to the applicant and will also cover feasibility studies and travel for business research.

Agri-Processing Product and Market Development Program – Livestock
This program exists to develop new and innovative means to getting Alberta-made products into new markets. The program can assist livestock producers or groups of livestock producers to a maximum of $500,000 or 50% of the costs of product and market development. Labeling and packaging (design and production), market research, coaching and consultant fees and the development of business plans are all covered. The program will be more favorable to wholesaling ventures, but local marketing groups will be considered also.

Business Opportunity Fund
This program provides information and knowledge to producers and producer groups to support business decisions. New producers and producer groups can be covered up to 75% and individual producers can be covered up to 50%. The program can provide up to $30,000 to a number of activities including feasibility studies, business plans, market research, value chain development, pricing models, marketing plans, mentoring and succession plans.

Business Management Skills Development Program
This program will cover 75% of approved business skills development training courses, to a maximum of $10,000 per individual. The program is available to individuals, groups and new entrants and will cover the costs of any training that seeks to develop management capacity, business management skills or industry networks, including Ranching for Profit and Holistic Management courses. However, the program will not assist with travel and transportation costs.

Food Safety Systems Program – Producer
This program will cover 70% of costs to a maximum of $5,000 for materials and programs that improve on-farm food safety practices in accordance with commodity-specific national on-farm food safety programs (www.beefsafety.ab.ca) and good food production practices. Items such as cattle squeezes, scales, milk guards and computer software used for record keeping would all be considered.

Irrigation Efficiency Program
This program exists to assist producers to invest in new or upgraded low-pressure centre pivot irrigation equipment and variable rate controllers and software. The program will cover up to 40% of costs to a maximum of $5,000. Applicants must have a Long-Term Irrigation Management Plan.

On-Farm Energy Management Program
This program assists agricultural producers with investments that improve energy efficiency on the farm. The program will cover 50% of costs to a maximum of $50,000 per farm. The program references a list of eligible items that contribute to installations and retrofits of high-efficiency equipment. Each successful applicant will be provided with a submeter so they can monitor real-time power usage online. Farm residences are ineligible and applicants must have a minimum of $10,000 in farm income receipts to apply.

These are the programs currently available, but many more will be opening soon! The **Agricultural Watershed Enhancement Program** will be accessed through municipalities and counties to assist farmers to adopt best management practices and develop run-on and run-off controls for spring run-off and high rainfall events. The **Biosecurity Delivery Agent (Producer) Program** will help producers assess, determine and reduce biosecurity risks and provide training on risk management. The **Food Safety Systems (Processor) Program** will help processors who are registered by federal or provincial inspection and currently wholesaling food, drink or pet food to adopt food safety systems. **The Livestock Welfare (Processor or Producer) Program** will assist processors or producers adopt practices that enhance humane animal care. Finally, the **Traceability Technology Adoption Program** will assist with 70% of the cost to adopt technologies for traceability.

For inquiries and assistance with Growing Forward, please contact our offices! We can provide you with assistance in finding a program that matches your needs, designing your project and even completing the application forms. Also, visit the website for Growing Forward 2 to find out more about a program that sounds like it might be of use to you: http://www.growingforward.alberta.ca/

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Taylor Iwasiuk
2013 PCBFA Summer Technician

Hi Everyone! I'd like to introduce myself, Taylor Iwasiuk, as the new PCBFA summer student for 2013. I just completed my first year at Lakeland College in Vermillion, where I am enrolled in their Agribusiness diploma, majoring in Livestock production.

I grew up on a small purebred and commercial cow calf operation just east of High Prairie, where I am still actively involved in all aspects of the family farm, Classic Livestock.

Growing up I was very involved in the local 4-H club for 9 years. I still enjoy giving back to the 4-H community, from judging 4H shows and public speaking competitions, to putting on fitting and showmanship clinics. I am also a past member of both the Jr. Hereford and Angus associations. My many summers spent at provincial Jr. Livestock events and camps helped spur my desire to become more involved in the beef industry. I'm also currently involved in the stockman's and judging clubs at Lakeland.

I thoroughly enjoyed my first year at College and learned that I have a keen interest in livestock production and forages. I hope this summer I will be able to meet lots of producers in the Peace Region and gain more experience involving forages and livestock production.

Evaluation of Low Heat Unit Corn Hybrids Compared to Barley for Grazing

Collaborator: Western Beef Development Centre (WBDC), Humboldt SK

Corn is an option for producers looking to extend the grazing season and reduce feed costs per cow per day. Continued interest in corn varieties for late fall and winter grazing has led the Western Beef Development Centre (WBDC) to develop a protocol to evaluate different varieties of corn hybrids with low heat units in comparison with AC Ranger barley. The main objective is to evaluate 3 different corn hybrids (1 Monsanto; 1 Pioneer; 1 Hyland) and 1 forage barley (Ranger) for quality and yield grown at 4 different sites in the Parkland area of Western Canada from 2012 to 2014. The project is taking place at 4 locations: 2 in Saskatchewan at Melfort and Glaslyn; 2 locations in Alberta at Evansburg and Fairview. Here, the results of forage yield and nutritive value of 3 corn hybrids and AC Ranger barley planted in Fairview this year are being presented.

Methods

The trial took place at the Fairview Research Farm (RR #35, MD of Fairview). Prior to seeding, a soil test was done for N, P, K and S and then the site was harrowed a few times. The site had a pH of 5.2 and 8.1% organic matter.

Three corn hybrids (Monsanto corn DKC 26-25, Pioneer corn P7443R and Hyland corn 2D093) and AC Ranger barley variety were seeded in small replicated plots measuring 3.81m x 14m. The corn heat units (CHUs) varied 2100 to 2350. AC Ranger is a feed barley and has smooth awns. Corn and barley were both seeded on May 28, 2012. Con hybrids were seeded with a 6-row Pioneer corn planter (at a row spacing of 30 inches) at 30,000 seeds/acre at 1.5-2.0 inch depth. Barley was seeded at 100 lb/acre to a seeding depth of about 1.5 inches. Just before seeding, corn plots were fertilized with 100 lb actual N/acre + 40 lb actual P/acre, while the barley plots received 40 lb actual N/acre + 23 lb actual P/acre. The fertilizer was drilled into the plots using a small plot drill. Barley was sprayed with 2-4 D amine at 0.67L/acre at the 4-leaf stage. Corn was sprayed with roundup at 0.67 L/ac application rate at the 5-leaf stage

On August 4, 2012, barley plots were sampled for estimation of forage dry matter (DM) yield at the soft dough stage. On October 4, 2012, each corn hybrid forage yield was determined from three 17.5ft long corn rows/plot. Randomly corn plants were selected from each replicate for each corn hybrid and then chopped with a corn chopper for determination of feed value in a laboratory. On the sampling day, the numbers of cobs per plant and cob maturity were assessed.

Results

Numbers of Cobs and Cob Maturity (Table 1): 2D093 had the most cobs per plant followed by DKC 26-25 and then P744R. On the sampling date, both P744R and DKC 26-25 were mostly in the 2/3 milk line stage. A few cobs particularly from P744R were observed to be in the early dough stage. But for 2D093, the cobs were mostly in the half milk line stage. Generally, all varieties had good cob development by the end of the growing season.

Forage Yield (Table 1): Percent dry matter (DM) varied from 32.1% for AC Ranger barley to 41.1% for DKC 26-25. The wet yield was lowest for AC Ranger barley (9.40 t/acre) and highest for P744R (15.75 t/acre). All corn hybrids generally had >14 t/acre wet yield. The DM yield did not vary much between the 3 corn hybrids, but all the corn hybrids significantly had higher DM yield (5.34 - 6.01 t DM/acre) than AC Ranger barley, which had 3.01 t DM/acre.

Forage Quality (Table 1): Protein content was higher for AC Ranger barley (11.05% CP) than the 3 corn hybrids which had 7.27 to 7.47% CP. Taking into consideration the protein requirements of beef cattle, only AC Ranger barley had sufficient amounts of 7 to 11% CP required by gestating and lactating cows. The 3 corn hybrids were only adequate for cows in the mid pregnancy stage. Cows in the late pregnancy stage grazing these corn hybrids would therefore need some form of protein supplementation using protein blocks or good legume hay with high CP content.

Forage Ca content was highest for AC Ranger barley with 0.50% Ca and lowest for DKC 26-25 with 0.23% Ca. Of the 3 corn hybrids, forage Ca content of DKC 26-25 was much lower than for other corn hybrids. All crops tested here had sufficient amounts of Ca needed for dry gestating cows. None was however adequate to meet the 0.58% Ca required by lactating cows. Only DKC 26-25 was short of meeting the 0.31% Ca requirements of growing and finishing beef cattle.

Table 1. CHUs, Forage Biomass & Feed Value of 3 Corn Hybrids and AC Ranger Barley

Measurement	Corn hybrids			Barley
	P7443R	2D093	DKC 26-25	AC Ranger
Biomass				
Corn heat unit (CHU)	2100	2350	2125	-
No. of cobs	1.05	1.65	1.44	
Dry matter (DM, %)	38.0	35.3	41.1	32.1
Wet yield, t/acre	15.75	15.3	14.1	9.4
DM yield, t/acre	6.01	5.34	5.77	3.01
Nutritive value				
Crude protein (% DM)	7.39	7.47	7.27	11.05
Calcium (% DM)	0.38	0.35	0.23	0.50
Phosphorus (% DM)	0.24	0.25	0.21	0.21
Magnesium (% DM)	0.20	0.21	0.18	0.16
Potassium (% DM)	0.89	1.00	0.92	0.89
Starch (% DM)	20.39	14.69	22.96	NA
Fat (% DM)	1.75	1.79	1.77	2.07
Acid Detergent Fiber (ADF, %DM)	26.26	26.45	23.45	25.07
Neutral Detergent Fiber (NDF, %DM)	46.70	46.11	41.62	NA
Total Digestible Nutrients (TDN, %DM)	69.19	70.30	71.59	69.29
Metabolizable Energy (Mcal/kg)	2.50	2.54	2.59	2.51
Net Energy for Maintenance (Mcal/kg)	1.61	1.64	1.68	1.61
Net Energy for Gain (Mcal/kg)	1.00	1.04	1.07	1.01
	# cobs	%DM	Wet yield	DM yield
$LSD_{0.05}$	0.24	7.46	2.21	0.971
Significance at P<0.05	yes	NS*	yes	yes
Coefficient of variation (%)	10.07	12.74	10.14	12.06
*NS, not significant				

Forage P content was between 0.21 and 0.25% for corn hybrids and AC Ranger barley tested. These values were within the ranges suggested for growing and finishing beef cattle (0.21% P) and dry gestating cows (0.16% P). But for lactating cows, which require 0.26% P, the crops fell short in meeting their P requirements. This therefore indicates that for cows in the late pregnancy stage, some form of mineral supplementation to address the short fall of both forage Ca and P contents is needed.

Forage P content was between 0.21 and 0.25% for corn hybrids and AC Ranger barley tested. The resulting Ca:P was highest for AC Ranger barley (2.38:1) and lowest for corn hybrid DKC 26-25 (1.10:1). Generally, all corn hybrids had <2.0:1 Ca-P ratios.

Both P744R and 2D093 had a higher forage Mg content than DKC 26-25 and AC Ranger barley. For forage K content, 2D093 had the highest K content, followed by DKC 26-25 and then by both P744R and AC Ranger barley. Both Mg and K met and even far exceeded the amounts of Mg and K contents required by dry gestating cows. For lactating cows, the Mg contents from both DKC 26-25 and AC Ranger barley were lower than the 0.26% Mg required during the early stages of nursing. The K contents obtained in this study were more than adequate for growing and finishing beef cattle, dry gestating and lactating cows.

Energy is probably the most important nutritional consideration in beef cattle production. A range of 55-65% TDN and 0.90-1.32 Mcal $kg.^{-1}$ NE_M have been recommended for beef cows by the National Research Council (NRC). The NE_M is an estimate of the energy value of a feed used to keep an animal in energy equilibrium, i.e., neither gaining nor losing weight. Generally, all corn hybrids and AC Ranger barley tested had sufficient amounts of TDN (69.19 -71.59%) and NE_M (1.61 –1.68%) needed for mature beef cattle during pregnancy and nursing of calves. The ability of these to be able to meet beef cows energy requirements is important to cow-calf producers in the Peace Region, particular during winter, as this will mean a substantial savings in feed energy costs.

Cows in the Understory – Yay or Nay?

by Karlah Rudolph

Can cows and trees work together in a productive multi-use landscape? This was the question we posed to the Alberta Agro-forestry and Woodlot Extension Society at our Shelterbelt Workshop held March 22nd, 2013 at Worsley Community Hall.

At first glance, the obvious answer is no. Cattle can do tremendous damage to understory vegetation and to the trees themselves. In fact, grazing cattle can be used to clear trees over time. Hoof impact hurts roots that lie near the surface, allowing disease organisms to come in. The weight of the cattle themselves closes air pores in the soil, reducing understory growth and creating opportunities for erosion to set in. Browse reduces the quality of the wood, making it less valuable as a timber harvest. Trailing along creek banks devastates riparian areas and some of the forage available in forested eco-systems is actually poisonous to cattle.

Finally, manureing on forested soils contributes to undesirable fertility in the soil. Trees try to grow longer in the fall and earlier in the spring in response to this fertility and thereby become susceptible to frost damage in the spring and fall. This factor contributes more than any other to tree kill in grazed forests.
Still, it is clear that graziers appreciate woodlots, shelterbelts and forested bluffs on their pasturelands for their ability to provide shelter and a windbreak and improve hydrological cycles. For others, forested lease lands or uncleared quarters are an essential component of their grazing rotation. It turns out trees can play several diverse roles either integrated into, or side-by-side with a grazing landscape. These roles include trees as any one of the following: a forested pasture; a riparian buffer; a silvopasture; a shelterbelt, a vegetative environmental buffer or an eco-buffer.

A Forested Pasture

Forested areas can provide adequate forage if stocking rates are matched to the available palatable vegetation. Many forested lands would not be productive as agricultural fields, so managed grazing is one way of maintaining these landscapes, which are tremendously valuable as wild lands and hydrological sinks, while still deriving a productive use from them.
Carrying capacity (AUMs or Animal Unit Months) is the number of animal units a pasture can support for one month. It is calculated to account for both the forage consumed by the livestock and the forage left behind to sustain the pasture. Carrying capacity varies widely from one plant community to the next, so ranchers are wise to consult with a provincial range agrologist to determine useful stocking rates.

Range agrologists recommend ranchers divide their rangeland into four types: preferred ranges; ranges that are grazed but not preferred; ranges that are not currently grazed, but which could be; and finally, non-use ranges (such as muskeg). It is ideal to fence the same types together. This management practice is especially important if part of the rangeland is bush pasture, because if cows are given the option, they will continually overgraze small areas of tame pasture, or more open grassed areas, rather than make full use of the forest understory. The end result is overgrazed, unproductive tame patches and under-utilized but nevertheless degraded forested areas. Conversely, planned grazing can sustain pasturelands of all vegetation types while optimizing use of the available forage. Forested pastures are best used in the summer months, when cattle impact is minimized.

Additional key tools in successfully managing forested pastures is to place salt or oilers at the opposite end of where cattle tend to loiter and to place off-site watering systems in upland positions, away from riparian areas. Drove trails are narrow hand-cut or one CAT blade wide cleared paths that can be used to move cows around a large area.

A Riparian Buffer

Increasingly it is important for ranchers to manage the access their herds have to existing water resources, particularly free-flowing creeks and streams. Trees and bush are an essential component of a functioning riparian buffer, which should extend to at least five meters on either side of the open water. These water pathways and their buffers are critical habitat for many water-loving creatures and also wild mammals and birds. Ranchers benefit from well-managed riparian areas because cows inevitably gain better if they are drinking clean water. There are numerous ways of managing these treed areas. An exclusion fence is best for heavily degraded riparian areas where quick recovery is desired. Riparian pastures are larger and allow for approximately one month of grazing use in the summer at an appropriate stocking rate. The idea is that the riparian pasture will serve as a corridor for wild life movement through agricultural lands. While riparian buffers may not seem like a productive use of trees per se, they are nevertheless an important component of good management that requires ranchers to understand the impact of their herd on treed landscapes.

A Silvopasture

A silvopasture is a landscape that is intended to provide forage for cattle while also growing a stand of economically productive trees that can meet their end use as timber or fuel. An average rotation for timber is 50-60 years, so the combined use permits some economic benefit to the landowner in the meantime. Cows under the canopy can control competitive grasses, and graze open areas between tree rows. Trees with taproots, such as oak, can be more useful in this type of system, as root damage is minimized. Electric fencing should be used to keep cows out of recently harvested stands, to allow for regeneration. On the whole, this system requires very tight and observant management to be workable, but has proven economically viable when such management is employed.

Judy Bowcott and Ken Herlinveaux of Wineglass Ranch near Grimshaw, AB (www.wineglassranch.ca) had moisture retention and windbreaks in mind when they designed their silvopasture, which consist mainly of poplar, larch, chokecherry, spruce and pine. Out of these, the larch and the chokecherry are establishing the best. Although the trees are still establishing, their hope is that the tree lines will improve forage yield on their hay fields by retaining moisture and will also serve as a windbreak, allowing them to graze cattle and distribute soil nutrients via manure during the growing season and in winter. Eventually, the idea is that the trees could be harvested for pulp, timber or biofuel. The picture with the cattle was taken at the end of May 2013, showing chokecherry in the first row with a few pine in the second row. The poplar were doing quite well in the second year of establishment, however they have been impacted by the dry weather conditions, deer and possibly the caterpillar invasion of last year.

A Shelterbelt

Most people know shelterbelts as the rows of trees lining the perimeter of farmyards. Shelterbelts are structured so that the lowest vegetation (typically a shrub such as lilac) is oriented so that the dominant winds will hit this vegetation first as they pass through the farmyard. The wind is directed upwards by the impact of the shrub layer and can then be further directed over a line of deciduous trees and finally conifers as it gets closer to the house and farm buildings. The inside row of conifers should be placed approximately 100 ft from the central house and farmyard to maximize protection from the wind. Another tactic in designing shelterbelts is to ensure the sun-loving species face south and southwest in every row, which can mean sun-lovers are placed on the exterior of the southernmost row and on the interior of the northernmost row. Shelterbelts can also play a role as a moisture retention structure around agricultural fields. On cropped acres, the moisture retention effect occurs up to a distance twenty times the height of the tree row (figure 2). Retained moisture provided by shelterbelts has proven to add a value of $8.80/acre on wheat and $14.40/acre on canola in some areas. Retained moisture can provide this benefit to forage crops and pasture lands as well, improving forage yield. Shelterbelts placed (or retained) along the perimeter of pasture divisions can serve as shelter for cattle, creating an option to winter graze an area that would be too cold and windy otherwise.

Having a shelterbelt means maintaining a shelterbelt. If there comes a point in time when a shelterbelt has greater than 25% death or greater than 25% insect damage, it requires attention. There should be no gaps in the belt and sod-forming grasses in the understory should be minimal. If there are a lot of dead trees, the manger should assess the cause. Is the lifespan of the tree spent? Is it the wrong species for the soil or hydrological conditions? Was there a disease? In the latter two situations, it would be wise to choose a different species when reestablishing the belt.

To establish a belt, it is important to pay attention to the correct spacing, both between rows and within a row. Tree stock must be in good shape. Little roots and fine hair roots are essential to establishment, so a manager should ensure they are still moist and active before accepting stock. Regardless, one should expect 10% mortality and order enough trees to account for this. With the Indian Head Shelterbelt Centre in Saskatchewan set to close December 31st of 2013, many landowners are left wondering how to source tree stock. The Beaverlodge Research Farm outside of Beaverlodge and Woodmuir Nursery in Fairview are two such sources local to the Peace Region.

Vegetative Environmental Buffer

Trees can play a role in odor and dust control around intensive livestock operations (ILOs). Vegetative environmental buffers are essentially shelterbelts that are designed to capture dust and odor that would otherwise escape from an ILO. Dust gathers on the leaves and precipitation later washes this dust to the ground. Odors are retained within the confines of the buffer. These buffers maintain a lower temperature on their interiors, making for a more humid environment where dust and odor settle more readily. Trees need to be more than fifteen feet tall in order to be effective as vegetative environmental buffers. While the impact these buffers have on public perception of ILOs is at least partly due to their visual appeal, studies have noted a 5-15% decrease in odor when such buffers are established.

Be Sure to Check Out Our New Website!!
http://peacecountrybeef.ca

An Eco-Buffer

An Eco-buffer is essentially a shelterbelt of native vegetation developed to such an extent that it functions as a self-sustaining, intentionally established forest eco-system. Eco-buffers are a minimum of five rows, and include all the understory components of a forest, in addition to the long-lived taller tree species. All of these components are established at the same time. Generally, approximately 10% of the plantings are long-lived species, 20% are nurse trees that establish rapidly, 30% are smaller shrubs and herbaceous cover species and 40% are large shrubs.

Eco-buffers are intended to play an essential role in attracting and feeding pollinators, so the design of one typically identifies plant species that will maximize the duration of the flowering season and maintain four different flowering species at any one time. Eco-buffers can also act as a source of timber, fuel, edibles, wild life habitat and beneficial pest habitat for integrated pest management. While eco-buffers can be planted around the perimeter of a quarter, they also often follow the contour of a given landscape, in keeping with natural design theories. As one might imagine, sourcing these plant materials and then establishing these systems can be difficult and costly, with some studies suggesting a cost of $18,000.00 per half mile. So, while the benefit of eco-buffers exists – particularly to pollinators and potentially for additional sources of income – eco-buffers are not widely established on the prairies.

All Told

All told, trees have the ability to provide additional economic value to a ranching income in many different ways. Trees provide numerous other social and ecological benefits. They are beautiful components of a rural landscape and can provide a windbreak, act as a hydrological sink, contribute to pollination services and wildlife habitat and even mitigate soil erosion. How tame plantations or existing native stands can be economically integrated into a grazing system will vary from ranch to ranch. However, out of all the multiple land users across the Peace Country, cattle ranchers are possibly best poised to integrate trees into their productive endeavors. Our industry is looking rather green after all.

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Best Environmental Technologies

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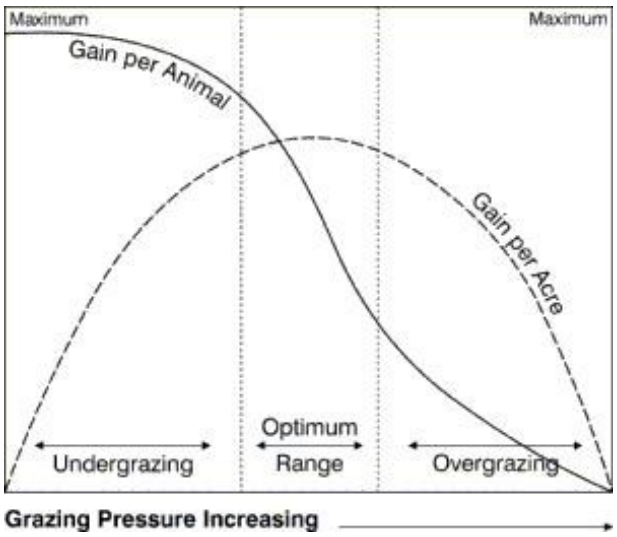
Stocking Rates vs. Carrying Capacity vs. Stocking Density Terminology to Keep You Busy Until the Cows Come Home!

by Taylor Iwasiuk

The key to a successful grazing operation is proper use of pasture, either native rangeland or tame forages. To be effective, the nutrients supplied by the pasture must be in balance with the nutrients required by the grazing animals. A farmer should strive for a pasture that is fully utilized, yet doesn't cause a decrease in the health of the rangeland. By understanding the difference between the stocking rate, stocking density and carrying capacity one can better understand the land, time and number of animals that can be placed on the pasture to ensure that it remains productive throughout the season and long term.

The amount of forage available on pastureland varies yearly. Research has shown that 3000 lbs of dry matter per acre can be achieved on a well-managed pasture. However, a yield of lower than 1000 lbs an acre is possible when there is a combination of the three most limiting factors; lack of fertilizer, lack of moisture and severe overgrazing takes place. For these reasons it is essential that the nutrients supplied by the pasture are in balance with the nutrients required by the grazing animals. The highest individual animal production will take place when forage supply exceeds demand, providing quality is maintained. Figure 1 shows how optimum grazing range is calculated.

Figure 1



The first step towards being able to calculate how many animals to put out grazing is to understand what an Animal Unit Month is. **AUM's**--- An Animal Unit Month is the amount of forage required by an "animal unit" grazing for one month. The standard animal unit is defined as one mature 1000 lb cow with or without a calf and is based upon the average daily forage intake of 26 lb dry matter per day or 80% of her body weight per month. Therefore, one animal unit is equivalent to around 780 lb dry matter forage. But who has 1000 lb cows in today's generation? More realistically, if your cows weigh 1250 lbs x 80% of their body weight = 1000 lbs a month. And if you run 100 head of cattle, that's 100,000 lbs of feed total. In general, the number of animal units, multiplied by the number of months they are on the range equals the number of AUMs used. The two tables below will help you in determining an AUE that fits your operation. If you run 1250 lb cows you would have an AUE of 1.25 etc. Bigger cows and heavier calves graze more grass, so adjustments need to be made when matching livestock needs with available forage.

Class of Animal	Animal Unit Equivalents
Cow, 1000 lb, with or without a calf	1.00
Bulls, 2 years and over	1.50
Yearling Heifers and Steers	.67
Weaned Calves	.50
Horse, 2 years old	1.00
Horse, 3 years old and over	1.5
Horse, yearlings	.75
5 Ewes or does, with or without lambs or kids	1.00
5 Rams or bucks	1.30
5 Weaned lambs or kids, up to 12 months	.50
Bison cow	1.5
Bison bull	1.8
Bison yearling	.75

The following table is a different type of an AUM equivalent table used by Manitoba Ag to help understand the adjustment factor for weight. They use a higher AUE for yearling steers and heifers.

Animal Unity Equivalent Conversions

Animal	Weight (lb.)	Animal Unity Equivalent (AUE)
Cow	1000	1.00
Cow	1500	1.50
Heifer	700	0.80
Steer	700	0.85
Bull	1700	1.40
Horse	1300	1.20
Sheep	120	.20

*A more practical solution is to adjust for changes in cow size on an animal unit equivalent basis by adding 0.1 AU for every 100 lb increase in live weight about the standard AU.

Sustainable Resource Development or Public Lands, uses a 1200 lb cow when calculating the AUM's for Provincial Grazing Reserves and Grazing Leases. In reality there is no difference taken into account for cow size or age of calf. A 1500 lb cow requires approximately 33 per cent more energy than cows weighing 1000 lb. Heavier milkers will need 58 per cent more energy and with a 500 lb calf at side, energy level needs to be increased to 71 per cent. For yearlings they use a standard .75 of an AUM. If producers stock their pastures with the same number of these larger animals without reducing the grazing period, overgrazing will result. Below is a table showing the effect of cow size, milk production and calf size on energy requirements.

Effect of cow size, milk production and calf size on energy requirements.[1]

Cow Class	Energy/Forage Requirements		
	(Mcal/d or lb/d)[2]	(%)[3]	(AU)
1,000 lb cow Standard Milker with Average Calf	24	100	1.00
1,500 lb cow [4] Standard Milker with Average Calf	32	133	1.33
Heavy Milker with Average Calf	38	158	1.58
Heavy Milker with Larger Calf	41	171	1.71

[1] Adapted from Beef Cattle Allowance Tables, 1987, Alberta Agriculture, Food and Rural Development
[2] Assumes forage has 1.0 Mcal/lb. of dry matter
[3] % of energy/forage requirements based on the 1,000 lb. cow as the standard
[4] Standard milker produces 10 lb/d, heavy milker producers 20 lb/d; average calf weighs 300 lb, large calf weight 500 lb

What is the difference between Stocking Rate and Carrying Capacity?

Determining Stocking Rates

Since forage production depends on soil and climatic condition, as well as the condition of the pasture stand, calculating a stocking rate for each individual pasture is necessary. Stocking rates are used to give a rough estimate of the maximum number of animals that can be grazed on a piece of land. It is expressed as the number of animal unit months (AUM) supplied by one mature acre of land for one year. For example an area that supports 30 cows for a four month grazing season has a stocking rate of 120 AUM for the area. If the pasture is 100 acres in size, it would be expressed as 1.2 AUM/acre.

The table below suggests the socking rates for seeded tame pastures in four condition classes AUMs/acre in Alberta. (Wroe, 1983)

Annual Precipitation Zones		**Pasture Condition Class**			
mm.	in.	Excellent	Good	Fair	Poor
250-350	10-14	0.75	.50	.40	.25
350-450	14-18	1.25	.80	.60	.40
450-550	18-22	2.00	1.40	1.10	0.70
550-650	22-26	3.30	2.20	1.60	1.10
Irrigation		7.50	5.00	3.75	2.50

*This table assumes average inputs and continuous grazing. Use stocking rates from the next higher precipitation zone when using a fertilizer program and rotational grazing. This only applies to the 350 to 550 mm zones.

Example: Calculating Number of Pasture Acres

Assume - 350 to 450 mm annual precipitation zone
- excellent pasture condition class (1.25 AUM/acre)
- grazing season 6 months (180 days)
- 120 cow/calf pairs (120 AU)

$$\text{Required Pasture} = \frac{\text{AU} \times \text{Months Grazing}}{\text{AUM/acre}}$$

$$= \frac{120 \times 6}{1.25}$$

= 576 acres for the grazing season

*Note with excellent management and high precipitation, required acres would be much lower.

Determining Carrying Capacity

For a grazing area of a given size represents, Carrying Capacity is the maximum number of AUM's that can be sustained without causing a downward trend in rangeland health. The carrying capacity measures the pastures ability to produce enough forage to meet the requirements of the grazing animal. It is the maximum number of Animal Units that can be supported by a rangeland unit for a given period of time. This is opposite to stocking rate in that it is more specific to a certain pasture, whereas stocking rates are your required acres for the grazing season.

Example: Calculating Carrying Capacity

Assume - Annual precipitation zone 350-450 mm
- 150 acres grass pasture in excellent condition (1.25 AUM/acre)
- Wanting 5 months grazing (150 days)

$$\text{Carrying Capacity} = \frac{\text{Acres x AUM/acre}}{\text{Months grazing}}$$

$$= \frac{150 \times 1.25}{5}$$

$$= 37 \text{ AU}$$

Terminology is important and if not used correctly, could misrepresent what you are actually trying to accomplish. Take note that ***Stocking Density*** is the number of animals on a particular area of land at a particular point in time. For example, a herd of 30 (1000 pound) cows on a 2 acre paddock on the 100 acres has a stock density of 15,000 lbs/acre or 15 Animal Units/acre, even though the stocking rate for the 100 acre pasture is 1.2 AUMs/acre.

Keep in mind that what actually happens in the industry is somewhat different. Most operations that pay grazing rent on cows pay a $/cow/month or cents/cow/day without taking into account the AUM equivalency. Common quotes seem to be in the $15 to $20 dollars per cow per month or 60-70 cents per cow/calf pair per day. A 1500 lb cow that calves in February is billed the same as a 1200 lb cow calving in May. This is the equivalent of selling hay by the bale! That would be the same as selling your Canola by the B-Train without a weight.

Sources: Alberta Agriculture, Manitoba Ag

Improved Sainfoin in the Pipeline - One More Tool in a Bid to Develop Bloat-Free Grazing of Legumes

article courtesy Meristem Land and Science

It's a marriage made in cattle heaven. Scientists have developed a new variety of sainfoin that when paired with alfalfa in a mixed stand offers the holy grail of bloat-free alfalfa pasture grazing for cattle.

Development of the new cultivar, tested as LRC 3902, was led by Dr. Surya Acharya of Agriculture and Agri-Food Canada (AAFC) in Lethbridge. With a proposed name of Mountainview, it offers cattle producers a brand new 'king' to pair with 'queen of forages' alfalfa, to provide innovative new options and many superior benefits. The new variety will in the seed multiplication stage, will be commercially available in 2015.

"This new sainfoin cultivar is truly one-of-a-kind and represents an exciting new opportunity for cattle producers," says Acharya, a long-time forage breeder and recipient of the 2012 Canadian Plant Breeding and Genetics Award. "It is the first sainfoin cultivar that will survive in alfalfa pasture and grow back at the same rate after cutting or grazing. It will prevent bloat in mixed stands to provide producers with their first real, economically viable option to allow for highly productive, bloat-free alfalfa pasture grazing."

Sainfoin is a high quality forage legume crop that features a condensed tannin concentration. This is very effective at preventing deadly pasture bloat in ruminants. However, until now, sainfoin cultivars have not survived well in alfalfas pasture or grown back after the first cut.

The new cultivar was bred to overcome those two hurdles and field trials show it represents a great success. It was derived from parental clones selected for improved forage yield in mixed stands with alfalfa and regrowth after cutting. When grown under irrigated and rainfed condition of Western Canada, LRC 3902 out yielded Nova, the check variety, by 22 to 42 per cent in pure stands and 30 to 39 per cent in mixed stands with alfalfa. It also showed strong regrowth.

"The Mountainview cultivar achieves what we set out to accomplish with our sainfoin improvement program," says Acharya. "It grows very well and fits all the criteria cattle producers have required to have a solid, reliable option to support bloat-free alfalfa grazing. This cultivar is well suited for preventing bloat in mixed alfalfa stands without loss in animal productivity."

Mountainview promises to live up to its name by delivering results at the peak of forage performance. Though four years of testing at different locations in Western Canada it proved a consistent leader in yield, maturity, seed weight, disease resistance and winterhardiness. Mountainview reaches flowering 10 days earlier than Nova and has a seed weigh with pod of 20-24 g per 1,000 compared to 18-22 g for Nova.

"Mountainview's rapid regrowth after cutting is very different from Nova and is one of its greatest benefits," says Acharya. "I think cattle producers will find a lot to like in this new cultivar."

That sentiment is echoed by Doug Wray, Wray Ranch, Irricana, Alta., Chair of the Canadian Forage and Grassland Association. "Legumes are vital to the productivity and sustainability of our tame pastures," says Wray. "Mountainview sainfoin offers exciting potential to increase the carrying capacity of our ranch".

More information is available at www.albertaforages.ca

Who and What does the Canadian Forage & Grassland Association Do?

by Morgan Hobin

The Canadian Forage & Grassland Association (CFGA) is a broad based organization recognizing and supporting the needs of both the domestic forage and grassland producers (hay, silage, pasture, straw, etc.) and the forage and forage product exporters (hay, cubes, pellets, straw). The members hail from across Canada and represent all sectors of the industry.

Increasingly the CFGA is becoming recognized as the voice of the forage and grassland sector in Canada. Some of the priority issue which they have focused on over the past year and will continue on, include:

- Working with all sectors of the industry in the development of CFGA Forage and Grassland Research priorities;
- Following up on the resolution from the 2012 AGM on ``Increasing Forage Research Capacity and development of Forage and Grassland Research Strategy`` the CFGA formed a Forage and Grassland Research Advocacy Group with continues to meet with AAFC officials an industry in addressing issues such as research capacity and succession planning;
- Creating awareness of the value and significance of the forage industry and the benefits of forage and grassland production to agriculture and to our environment;
- Establishment of a CFGA Environment Committee which is providing direction related to forage and grasslands and the environment. The goal being to develop and/or compile as necessary information that demonstrates to farmers, industry, consumers and the general public how forages and grasslands contribute to economic, environmental and social sustainability locally and globally``;
- Providing leadership in the development of a National Forage Variety Performance Trials program;
- The CFGA Forage Export sector has concentrated on the development of market protocol into markets such as China. This has included the visit from a Chinese group in developing timothy protocol as well as addressing some of the difficulties with the alfalfa protocol for exporting to China;
- The CFGA Export Committee continues to monitor and provide input on such items as: transportation and logistics issues; mandatory shipping regulation; cash advance programs for alfalfa and timothy and Korea Free Trade negotiations;
- The membership base of the CFGA continues to expand with additional Overseas Exporters, US Exporters and a membership from the Ontario Soil and Crop Improvement Association;
- Partnership Development continues to be a key area of emphasis with industry as we explore partner programs that will support the work of CFGA.

CFGA Conference & AGM 2013

The fourth CFGA Conference & AGM will be held in Olds, Alberta December 10th & 11th with an optional tour on December 9th. The Conference theme this year is ``*Taking Forages Mainstream - Challenges, Pitfalls and Opportunities*``. They are working with the Alberta Forage Industry Network as hosts and in addition with Olds College. The College is celebrating its 100th Anniversary and the event will include the use of the brand new POMEROY Olds Hotel. The tour will appeal to all aspects of the forage and grassland sector and will showcase Alberta`s Densified Hay Processors, a hay drier, innovative winter grazing techniques, grazing native rangeland and more.

Forage and grassland research, the role of forages in rotations, forages and the environment and the public perception of the value of forages are just a few of the topics that will be included in the Conference program. Concurrent forage export marketing sessions will be of interest to those in the forage export business.

For more information about CFGA and the upcoming event visit www.http://www.canadianfga.ca/

Annual Forage Trials in the Peace: Research Updates

by: Kabal Gill, Akim Omokanye & JP Pettyjohn
PCBFA & SARDA

Feed accounts for a greater portion of the total costs for beef cattle production. A major portion of these costs comes from confined feeding in late fall and winter, which can last for six to seven months. In order to reduce winter feed costs, beef cattle producers have always explored several options to extend the grazing season with annual forage crops. There is a need for continued effort for recent data (on agronomic adaptation, forage yield and quality, and animal performance) as new annual forage type crop varieties become available for evaluation for greenfeed, swath grazing and silage in the Peace region. PCBFA in collaboration with SARDA examined a varieties of barley, oat, triticale and pea-cereal mixtures (intercrops) in parts of the Peace, to identify varieties with superior forage yield and feed quality for beef cattle production.

Methods

Several field trials were conducted on farmers' fields near High Prairie, Valleyview and Debolt from 2009 to 2012. A few varieties were only tested for 3 years but most varieties were tested for 4 years. We tested 12 barley, 9 oat and 6 spring triticale forage/feed type varieties (see Table 1). Forage type pea variety (40-10) was intercropped with a variety each of barley, oat and triticale. Seeding rate was 250 seeds/square meter (24 seeds/square feet) for barley, oat and triticale. For the pea-cereal intercrops, pea was seeded at 75% of recommended pea seeding rate and the cereals in the intercrops were seeded at 50% of recommended cereals seeding rate. All plots received equivalent amounts of fertilizer, based on the soil tests done prior to seeding. In crop spraying was carried out when necessary. Harvesting for forage yield was done at the soft dough stage for barley, at the late milk stage for oat and at the late milk stage for triticale.

Results and Implications

To improve forage management and utilization and also to accurately develop supplementation programs for forage-based production systems, it is important to know how the nutritional values of forages match up with beef cattle needs. The results presented in this article (Table 1) are discussed as relating to selecting oat varieties for use in the beef cattle production systems, with focus on nutrition quality. Information on forage DM yield is also provided.

Barley

Of the 12 varieties, only Busby had > 8000 lb DM/acre. The 2-row barley varieties were the top five DM yielder (≥7310 lb DM/acre). Considering the protein requirements for beef cows from the second trimester to post calving, all barley varieties tested met the recommended values of 7-9% CP requirement for pregnant beef cows. But only four (CDC Austenson, Chigwell, Seebe and Vivar) varieties were within the 10-11% CP recommended after calving. For varieties that were short of meeting the CP requirements of lactating cows, the implications will depend on the other feed sources (whether low or high in CP content) being eaten by cattle at the same time.

The varieties tested generally had low P content and none met the P requirements for the cows that are pregnant or nursing calves. This indicates that some form of mineral P supplementation may be needed when forage barley is fed to beef cattle. Both the K and Mg contents in all the varieties were within the recommended levels for pregnant and nursing cows, and generally within the maximum tolerable concentrations of 3.0% for K and 0.4% for Mg. Generally, all barley varieties had sufficient amounts of TDN needed for mature beef cattle during pregnancy and nursing of calves. The ability of barley tested varieties to be able to meet beef cows energy requirements is important to cow-calf producers in the Peace Region, particular during winter, as this will mean a substantial savings in feed energy costs.

According to a quick guide to forage allocation by cattle class, all varieties far exceeded the suggested RFVs for beef cows (90-115 RFV), and were generally within the ranges suggested for replacement heifers (115-135 RFV) and back grounding stockers (125-150 RFV). Two of the three varieties with superior RFV (CDC Austenson and Ponoka) are two-row and semi-dwarf barley varieties.

The overall results based on over 25 parameters (including on plant growth, DM and several forage quality parameters) indicate that barley forage is a good option for beef cattle in the Peace Region. In term of forage yield, Busby was the best variety, followed by Ponoka and then by CDC Cowboy and Seebe in that order

But based on nutritive value, CDC Austenson, Chigwell and Ponoka were the best all-around in that order - specifically taking into consideration forage CP content, the tendency to be consumed more and be better digested by beef cows. Five of the six varieties listed above belong to the two-row barley type, an indication that the two-row barley type may be better yielding, nutritious and adapted crop for silage production in this environment. Any of these top varieties would therefore be a good alternative to Xena (check for the two-row barley) or Vivar (check for the six-row barley) for silage, green feed or even swath grazing system in the Peace.

Oat

Forage DM varied among varieties. AS Mustang had the highest DM (6058 lb DM/acre), followed closely by Murphy with 5901 lb DM/acre. CDC SO-I had the lowest DM (4170 lb DM/acre).

Considering the CP contents of oat varieties (6.45-8.26% CP), only 5 of the 9 varieties were able to meet the 7% protein requirements of cows in the mid-pregnancy stage. Further, none of the varieties tested had adequate amount of CP needed by cows in the late pregnancy and lactating stages as well as by growing heifers. Similarly, no varieties had sufficient amount of CP needed by the medium frame heifers (weighing 700 lb and need 9% CP).

Only Everleaf had within the suggested 8-9% CP level for a 24 months plus mature bull. This indicates the need to always do a feed test on oat varieties in the Peace and provide some form of protein supplementation when necessary.All oat varieties met and even far exceeded the Ca requirements for dry gestating cows (both in the mid and late pregnancy stages). Five (Everleaf, Foothill, AC Morgan, Waldern and CDC SO-I) of the nine oat varieties also met the growing and finishing cattle requirements. But all varieties fell short of meeting the Ca needs of lactating cows. None of the tested oat varieties were able to meet the P needs for any classes of the cows. All the evaluated varieties far exceeded the suggested amounts of K and Na needed by growing and finishing beef cattle and dry gestating cows as well as lactating cows. Similarly, all varieties sufficiently met the Mg requirements by growing and finishing beef cattle, while 2 (Baler and Foothill) varieties fell short of Mg content needed by dry gestating cows.

All the 9 oat varieties screened had sufficient amounts of TDN for beef cows during the pregnancy and lactating stages. But, none of the varieties had sufficient amount of TDN required by growing calves. Thus, feeding any of these varieties to growing calves would require additional energy source(s) to meet the TDN requirement.

The overall results based on 31 parameters (including on plant growth, DM and several forage quality) indicate that barley forage is a good option for beef cattle in the Peace Region. The overall results based on plant growth, DM and several forage quality parameters indicate significant differences among the tested oat varieties for plant height, DM, detergent fibers (NDF & ADF), some mineral contents (Ca & Mg) energy content (TDN) and RFV. Except for Foothill and Waldern (with lower CP contents than others), the tested oat varieties had sufficient CP needed by cows in the mid-pregnancy stage (7% CP). The oat varieties were not consistent in meeting the P and Mg requirements of growing and finishing beef cattle, dry gestating and lactating cows. Because of these inconsistencies, some form of commercial mineral supplement would be required. Similarly, feeding these oat varieties to cows in the late pregnancy stage and lactating cows, which require 9 and 11% CP, would require some form of protein supplementation. Based on the DM data, Murphy and AC Mustang were identified as the high forage yield potential varieties. CDC SO-I had better quality.

Triticale

Forage DM yield was highest for Bunker (7618 lb DM/ac) and lowest for Companion (6780 lb DM/acre). CP varied from 7.72% for Companion to 8.32% for Taza. All triticale varieties were within the suggested CP contents for a dry gestating cow, but fell short of the requirements for a lactating cow. Forage P and K did not differ much among varieties. But forage Ca and Mg differed to some extent among triticale varieties. Forage Ca varied from 0.21% for both AC Ultima and Taza to 0.29% for Bunker. Forage Mg content varied from 0.10% for both Pronghorn and Taza to 0.14% for Companion. All varieties had sufficient amount of Ca and K needed by a dry gestating cow. Three (Pronghorn, Taza and Tyndal) of the six varieties fell short of the amount of Mg required by a dry gestating cow. All varieties had adequate K and Mg contents needed by growing and finishing calves. All varieties had sufficient K content needed by lactating cows. Generally, TDN for all varieties was >61% and was sufficient for both dry gestating and lactating cows.

Table 1. Forage DM & some quality parameters of annual forage crop varieties tested for 3-4 years in parts of the Peace

Crop Variety/ Intercrop	DM	CP	Ca	P	K	Mg	TDN	ADF	NDF	RFV
	(lb/ac)	(% DM)								
Barley										
Busby	8415	8.70	0.43	0.17	1.43	0.13	64.0	32.1	48.6	125
CDC Austenson	7310	10.2	0.35	0.14	1.50	0.14	66.8	28.4	44.0	143
CDC Cowboy	7391	9.39	0.37	0.14	1.58	0.14	63.2	33.0	52.6	116
Ponoka	7746	9.27	0.44	0.14	1.54	0.14	65.1	30.1	48.1	131
Seebe	7351	10.4	0.38	0.16	1.62	0.14	64.8	31.0	50.0	124
Xena	7054	9.72	0.33	0.15	1.42	0.13	64.7	31.0	50.5	126
AC Lacombe	6601	9.34	0.48	0.15	1.63	0.17	64.7	31.1	48.9	125
AC Ranger	6425	9.53	0.41	0.16	1.72	0.16	65.1	30.6	49.4	128
Chigwell	7165	10.1	0.44	0.14	1.45	0.17	66.3	29.0	44.8	139
Sundre	7145	9.13	0.40	0.15	1.62	0.15	64.8	30.9	50.0	121
Trochu	6967	9.64	0.42	0.14	1.69	0.15	64.6	31.2	49.5	125
Vivar	7198	10.2	0.43	0.14	1.63	0.16	64.0	32.0	50.8	121
Mean	7189	9.63	0.41	0.15	1.58	0.15	64.8	31.0	49.2	126
Oat										
CDC Baler	5550	7.19	0.27	0.12	1.53	0.11	61.4	35.3	59.6	97
Everleaf	5250	8.26	0.30	0.12	1.83	0.13	58.5	38.7	59.8	93
Foothill	5487	6.81	0.29	0.10	1.51	0.11	58.2	39.4	60.0	91
AC Jordan	5748	6.94	0.27	0.11	1.50	0.13	61.1	35.7	58.3	99
AC Morgan	5417	7.10	0.31	0.12	1.66	0.12	58.8	38.7	59.0	93
AC Mustang	6058	6.98	0.26	0.10	1.65	0.12	57.3	40.5	61.1	88
Murphy	5901	7.84	0.29	0.11	1.54	0.13	59.0	38.4	60.0	92
Waldern	5286	6.45	0.34	0.09	1.64	0.13	57.5	40.3	63.0	85
CDC SO-1	4170	7.31	0.36	0.11	1.74	0.15	62.0	34.6	56.6	103
Mean	5478	7.21	0.28	0.04	1.62	0.12	59.0	38.3	60.2	92
Triticale										
AC Ultima	7273	8.01	0.21	0.13	1.27	0.12	64.1	31.9	49.5	121
Bunker	7618	7.94	0.29	0.12	1.25	0.13	62.8	33.6	51.2	115
Companion	6780	7.72	0.27	0.11	1.19	0.14	63.6	32.5	50.5	118
Pronghorn	7495	8.05	0.22	0.13	1.36	0.10	62.4	34.1	51.2	113
Taza	7596	8.32	0.21	0.15	1.36	0.10	62.8	33.5	52.1	112
Tyndal	7305	8.00	0.24	0.14	1.33	0.11	62.1	34.3	52.9	110
Mean	7376	8.02	0.24	0.13	1.30	0.12	62.9	33.3	51.3	115
Pea-cereal mixtures										
40-101/Murphy2	6479	9.51	0.55	0.13	1.77	0.18	59.6	37.5	54.4	104
40-10/Pronghorn3	6846	10.0	0.50	0.14	1.48	0.16	63.8	32.1	47.3	127
40-10/Vivar4	5615	10.8	0.64	0.12	1.35	0.20	66.8	28.2	42.4	148
Murphy	7276	10.7	0.56	0.12	1.67	0.19	60.9	35.9	53.2	107
Pronghorn	7433	10.0	0.47	0.12	1.39	0.16	64.2	31.6	48.1	124
Vivar	7388	11.3	0.57	0.11	1.44	0.20	64.8	30.9	46.4	133
Mean	6839	10.4	0.55	0.12	1.52	0.18	63.3	32.7	48.6	124

Pea - Cereal Intercrops

In all cases, the cereal varieties seeded alone without pea had higher DM yields (7276 - 7433 lb DM/acre) than when intercropped with pea (5615 - 6846 lb DM/acre). The 40-10 pea variety/Vivar barley intercrop was the least favoured intercrops. Forage CP varied from 9.51 % for 40-10/Murphy oat intercrop to 11.3% for Vivar barley seeded alone. The CP contents of all varieties were generally sufficient for dry gestating and lactating cows. Forage Ca and K contents were generally high for all intercrops and sole cereals, and they both exceeded the requirements of growing & finishing calves, and those of dry gestating and lactating cows. The P requirements by different categories of beef cattle were not met by any of intercrops or sole cereals. Forage TDN varied from 59.6% for 40-10/Murphy intercrop to 66.8% for 40-10/Vivar intercrop. Regardless of whether pea was intercropped with cereal or not, TDN obtained was sufficient for both dry gestating and lactating cows.

General Conclusion

Generally, for the different crop types (barley, oat, triticale) as well as the pea-cereal intercrops tested, the crop varieties had adequate CP and Ca contents needed by dry gestating and lactating cows. Forage K and energy (TDN) requirements of both dry and lactating cows were always met by the different crop types.

Looking at the mean DM yield for each crop type, triticale had the highest DM (7376 lb DM/acre), followed closely by barley (7189 lb DM/acre), then pea-cereal mixture (6839 lb DM/acre) and then by oat (5478 lb DM/acre) in that order. Forage CP was in the following order: pea-cereal mixtures (10.4% CP) > barley (9.63% CP) > triticale (8.02% CP) > oat (7.21 % CP).

(This year, 16 barley, 9 oat and 5 triticale varieties, and 9 peas-cereal intercrops are being evaluated by PCBFA at the Fairview Research Farm (RR #35, MD of Fairview).

For more information, please contact PCBFA@ 780-835-6799 or SARDA@ 780-837-2900

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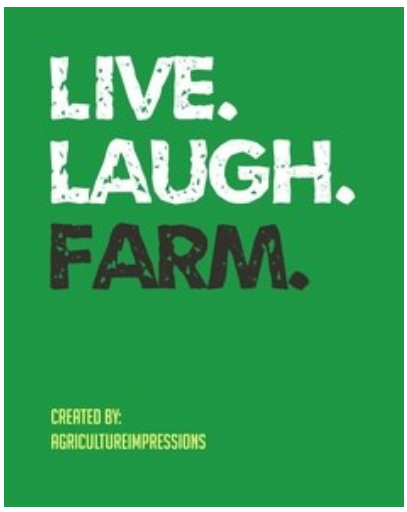
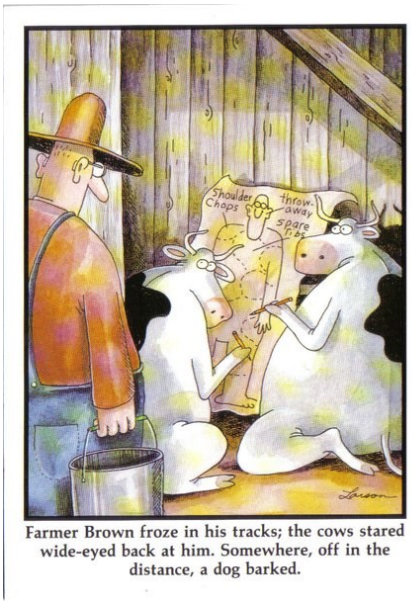
Monika Ross
New PCBFA ASB Project & Extension Coordinator!

Monika has joined the PCBFA team and will be working out of the High Prairie office as the Agricultural Service Board Project & Extension Coordinator. We would like to welcome her to the Association and encourage producers to stop in for a visit.

A bit about Monika….

Having grown up around the cattle business in the Peace Country, agriculture and the livestock industry have always been my passion. I have a Bachelor of Science in Agriculture, with a major in animal science from the University of Alberta. I began my career in the Peace Country with Champion Feeds and have gained a wealth of knowledge over the past year while working for Farm Credit Canada. I am very excited to join the Peace Country Beef and Forage Association and have an opportunity to work with Peace Country Cattle producers!





Farmer Brown froze in his tracks; the cows stared wide-eyed back at him. Somewhere, off in the distance, a dog barked.

Fall/Winter 2013 Events

EVENT	DATE	TIME	LOCATION	CONTACT
Grassfed Beef School	September	TBD	Grimshaw	PCBFA 523.4033 835.6799
Triticale for Swath Grazing Field Day	September	10am-4pm	Whitelaw	PCBFA 523.4033 835.6799
Corn for Grazing Field Day - Standing vs Swathed	October	10am-4pm	Fairview	PCBFA 523.4033 835.6799
Pasture Cropping Workshops	October	10am-4pm	Valleyview High Prairie Spirit River Grimshaw	PCBFA 523.4033 835.6799
Google Earth Training Sessions	November	6:30pm-9:30pm	Debolt Fairview High Prairie	PCBFA 523.4033 835.6799
Young Farmer Workshops	Sep-Dec	6:30pm-9:30pm	Savanna Valleyview High Prairie Grimshaw Worsley	PCBFA 523.4033 835.6799
Canadian Forage & Grassland Association Conference & AGM	Dec 9-11	TBD	Olds	PCBFA 835.6799

For more information about any of our field days, workshops or project sites please call either Peace Country Beef and Forage Association Office.
Fairview 780-835-6799 or High Prairie 780-523-4033

Thank you to all our Funding Agencies.

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