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FORAGE COUNTRY

WINTER 2018

Improving Cattle Health & Reducing Costs Of Finishing Diets With Calcium Oxide Straw

By: Katie Stehr, Gabriel Ribeiro, Darryl Gibb and Tim McAllister

With feed costs representing 60-70% of total costs in beef production systems, producers are always looking for ways to improve margins through low cost feeding. This is important in years like 2017 where dry weather made procuring forage even more difficult. Low cost forages such as poor quality hay and straws can help to reduce feeding costs, but have limited nutritional value without supplementation.

Forages provide the fibre component to beef cattle diets. Fibre is especially important in high grain finishing diets, with a rule of thumb recommending that diets contain 7-10% forage (on a dry matter basis) to stimulate chewing and rumination and reduce risk of acidosis. Silage is the most common forage in feedlot cattle diets, however availability and price can greatly impact inclusion level. Fibre in silage is also not as effective at stimulating rumination and saliva production as the fibre in cereal straw. If the nutritional quality of forages like cereal straw can be improved to a point where inclusion in the diet doesn't impact cattle performance, there is potential to improve its use and profitability margins.

Chemical treatments can improve the nutrient availability of low quality feeds. Common treatments previously explored are ammonia, urea, sodium hydroxide, and calcium hydroxide. Alkaline chemical treatment, with compounds such as sodium hydroxide and calcium hydroxide, disrupts the strong fibre structural linkages and frees cellulose and hemicellulose from lignin, allowing it to be digested by the rumen microorganisms. This reaction is beneficial in straws due to their high lignin content. During the plant lifecycle there is an inverse relationship between yield and quality, with older cereal crops having almost all nutritional components within the seed, and the stalk being mainly composed of highly lignified-poorly digestible fibre.

Currently, we are completing research at Agriculture and Agri-Food Canada in Lethbridge, AB on the potential of feeding cereal straw treated with calcium oxide (CaO) and water in wheat-based finishing diets as an equivalent replacement for barley silage. We are examining the impact of removing calcium and salt in these diets as well. CaO acts as source of dietary calcium and can thus serve as an alternative to limestone. Salt (NaCl) is another bulky feed ingredient that is often included in diets, however its requirement by beef cattle is often disputed.

Continued on Page 3



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Peace Country Beef & Forage Association

‘Strengthening Agriculture, One Farm At A Time’

Having worked in the Peace Country for many years, we have established ourselves as an innovative association, willing to work with local businesses, educational facilities, other research groups and always with the producers from across the Peace Region.

Our programs vary from environmental concerns to finding the newest technology and helping producers implement it on their operations.

Our board is made up of producers from across the Peace Region, who actively voice questions, ideas and concerns to address the needs of farmers and ranchers of the Peace.

Vision

The Peace Country Beef & Forage Association is a producer group with the goal to be a hub of innovative, relevant and local beef, forage and crop information for Peace Country producers.

Mission

A Peace Country producer’s first stop for optimizing beef, forage and crop production to maximize profitability with innovative and credible information.

If you have any questions, comments or feedback about our current extension events or any of our projects, please do not hesitate to give us a call at either PCBFA office.

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*PCBFA Grazing School With Jim Gerrish
2017*

Improving Cattle Health & Reducing Costs Of Finishing Diets With Calcium Oxide Straw, *Continued*

By: Katie Stehr, Gabriel Ribeiro, Darryl Gibb and Tim McAllister

Salt has been recommended at inclusion rates of 0.37% for receiving diets and 0.30% for finishing diets.¹ It is not clear if cattle under feedlot conditions require a source of salt, due to efficient metabolism and sodium conservation methods and due to the relatively short lengths of the feeding period (i.e. 150 to 240 days). Furthermore, excessive salt feeding can lead to salinity issues once manure is applied to the land, particularly with large feeding enterprises.

Research from Nebraska State examined CaO treatment of corn stover, corn cobs and wheat straw as a replacement for corn and wet distillers grains with solubles (WDGS) in finishing diets. Analysis showed an improvement in final body weight (5.6%), greater average daily gain (9.7%) and an improved gain to feed ratio (10.7%) when treated residues were fed, as compared to non-treated residues. They concluded that CaO was an effective treatment to improve fibre digestion, and that feeding 20% calcium oxide treated crop residue would provide a similar nutrient supply to finishing steers as a diet containing untreated residue and 10% more corn grain (46% vs. 36% dry rolled corn).²

Previous research stored CaO treated forage in anaerobic bins or grain bags as it tended to spoil if air was not excluded. We decided that this may not be a practical or valuable option for many producers and chose to store the treated product outside in small piles before feeding. The straw was treated using a small, research scale mixer and stored in bays. Present results indicate that the digestibility of wheat straw was improved as a result of treatment with CaO for 2 days before feeding. A growth performance trial will conclude in late February and will give insight into differences in growth and feed efficiency between cattle fed CaO straw and those fed untreated straw or barley silage. Additionally, carcass data and liver abscess scores will be collected to determine if there is any impact on meat quality or liver health. Liver abscesses can be used as an indicator of ruminal acidosis during the feeding period. We hope to see a reduction in liver abscesses in cattle receiving diets with straw vs. silage, illustrating the value of CaO treated straw for improving rumen function and animal health.

While feeding alkaline treated straw sounds promising, there are certainly some challenges to implementation in production. Firstly, raw CaO is a highly alkaline product which reacts with moisture and generates a substantial amount of heat. In our research, water is added to create CaO straw with a moisture level of 50%, which reduces the risk of combustion. The product is also highly corrosive, so it can damage equipment over time and personal protective equipment is needed when handling the product. Currently, straw is treated daily and allowed to react for 48 hours before it is fed, a time-consuming practice that could limit its adoption in feedlots.

Tight margins demand that feedlot managers be conscious of costs of production and profitability, therefore new methods and practices to reduce the cost of gain in fed cattle would have economic benefit to cattle feeders. Processing of low quality forages and crop residues (i.e. straw) to improve feed value may serve as an option to reduce the cost of feedlot diets. A full economic assessment of the value of the CaO technology will be undertaken upon completion of the project.

¹ Samuelson, K.L., M.E. Hubbert, M.L. Galyean, and Løest, C.A. 2016. Nutritional recommendations of feedlot consulting nutritionists: The 2015 New Mexico State and Texas Tech University survey. *J. Anim. Sci.* 94:2648-2663.

² Shreck, A.L., J.L. Nuttelman, W.A. Griffin, G.E. Erickson, T.J. Klopfenstein, and Cecava, M.J. 2015. Digestibility and performance of steers fed low-quality crop residues treated with calcium oxide to partially replace corn in distillers grains finishing diets. *J. Anim. Sci.* 93:661-671.

May The Forage Be With You

DUC & CPS offer financial break for grassland conversions



On land not so far away, Alberta cattlemen will see their herds go to the green side thanks to a forage program with cash back incentives offered by Ducks Unlimited Canada (DUC) and Crop Production Services (CPS).

Available to all Alberta ranchers and landowners, the DUC/CPS forage program provides cash-back incentives on all Proven® Seed forage seed purchases paid at full-retail price when producers convert cultivated land to hay or pastureland.

With the growing need for high quality pastureland, it's expected that this year's program will be an attractive option for producers, says Craig Bishop, DUC's regional forage lead, especially in light of economic and climatic conditions.

“When landowners want to increase the size of their herd, it spurs a demand for more forage,” says Bishop. “Last year's weather conditions also resulted in poor hay crops and further motivated producers to convert more land to forage. In 2017 in Alberta, 13,000 acres of cultivated fields were seeded to grass under this program.”

Bishop adds that reducing input costs, especially at a time when expenses are rising more quickly than revenues, makes a real difference to the bottom line for farmers. “Offering incentives to producers to convert cultivated acres to forage is an extremely cost-effective means for increasing grassland and it makes good agronomic sense. Essentially, the program covers approximately 40–50 per cent of a producer's seed investment.”

In addition to helping cattle producers, more forage acres benefits waterfowl. Bishop explains that research shows that the level of waterfowl nesting is significantly higher in areas of perennial cover than in cultivated fields. It also helps with other conservation measures such as wetland restoration.

“The link between wetlands, associated grasslands and waterfowl productivity is well understood,” says Bishop, “and initiatives like our forage program ensures that Alberta farmers also receive benefits from increasing their forage base.”

While the DUC/CPS forage program is best suited for producers in the parkland and prairie regions, anyone who wants to seed forage can take advantage of the program and should contact Craig Bishop at 1-403-607-5805 or c_bishop@ducks.ca, or their local CPS retailer.



For more information about any of PCBFA's field tours, workshops or project sites please call either Peace Country Beef and Forage Association office.

Fairview 780-835-6799 or High Prairie 780-523-4033

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2018 Cattle Market Outlook

By: Brian Perillat

The 2017 cattle market can be summarized as having larger cattle numbers, more beef production, and higher prices; throw in good profitability through the supply chain, and it is certainly a good news story.

The overall market tone has been positive, and the Canadian cattle market has performed very well relative to the US market. Alberta cull-cow prices have been stronger than the US virtually all year, and despite the fact that western Canadian feed costs have risen dramatically relative to the US, there have been very few feeder exports, and even imports of US feeder cattle. This shift in feeder trade points to a very competitive Canadian feeder market as prices have also been premium to the US.



The US cattle herd has had a major expansion over the past 3 years, and this will lead to continued larger production in at least the next two to three years. Beef production hit its low in 2015, and by 2018 it is expected to increase 16.5%, a 4 billion pound increase. The larger production has been met with increased exports, and not only have the volume of exports increased, the price has also increased at the same time which has been very supportive to the North American cattle and beef markets.

The Canadian cow herd has remained relatively flat around 3.8 million beef cows for the last four years. Although the herd has not grown, beef production in 2018 could increase for the third consecutive year as more cattle are fed and processed in Canada. The Canadian cow herd is not expected to show much growth, as current cow marketings are near steady with a year ago, and heifer retention has shown only a marginal increase. If good growing conditions were to materialize, and feed supplies were to increase next year, this could encourage some herd growth.

The stage is set for 2018, the growing cattle herd and significantly more cattle put on feed this fall will lead to increased beef supplies, especially in the second half of the year. The current futures markets are pointing to higher prices next summer despite these larger supplies. Strong demand could support the higher prices, but there is certainly some risk in the market place heading later into 2018 as feedlot break-evens are well above the prices seen in the summer of 2017.

In addition to watching how the cattle supply and demand factors unfold, other key factors to watch will be the Canadian dollar. A dollar over 80 cents would add further price risk to the Canadian market, while a lower dollar would be supportive. Feed costs are always a key driver on calf and feeder prices, and basis levels between Canada and the US can have a big impact on Canadian prices and profitability.

For more cattle market information, please visit the Canfax website for information and details on how to become a Canfax member.

www.canfax.ca

Swath Grazing: More Than Just Frozen TV Dinner For Your Overwintering Cattle

By: Mustafa Eric, AFSC

Swath grazing: More than just frozen TV dinner for your overwintering cattle. The phrase in the above title to describe the practice of swath grazing was coined by none other than Dr. Vern Baron, a leading scientist on forage research at the federal government's agricultural research centre in Lacombe.

“Swath grazing is just like providing cattle with frozen TV dinners. And they don't mind eating them outside,” he says explaining why this practice, believed to be tested and adopted by some 30 to 50 per cent of cattle producers, can be cost effective. Dr. Baron says the practice of swath grazing has multiple benefits, including reducing on-farm labor to 34 per cent, diesel fuel required to 25 per cent and land required to feed cows over winter by 50 per cent. These are all possible if the swath-grazed crops are high yielding and managed to their optimum. The advantage is that more cows can be managed on the same amount of land, with the same or less labor and a reduced carbon footprint.

Swath grazing is, in a sense, extending the grazing season and in doing so, saving on many expenses that might add up to a substantial total. Selecting this option for feeding overwintering cattle will save a producer from spending time, money and effort on the following operations: harvesting, hauling feed, processing and managing/hauling manure. As an added benefit, the cattle leave the manure in the field while grazing, effectively fertilizing the land without any effort on the part of the producer.



Another point to consider is that energy and fuel saved through swath grazing reduces the carbon footprint of the cow herd, perhaps as effectively as carbon sequestration. Dr. Baron's research found that compared to traditional feeding methods, swath grazing 100 cows for 100 days saved the equivalent of 2,534 L of diesel fuel. This amounts to reducing atmospheric greenhouse gas emissions by 67 kg of CO₂ for each cow that grazes for 100 days. A carbon credit worth \$12 per tonne for 300 cows at this rate would be worth \$240. If the carbon credit increases to \$50 per tonne, the credit would be worth \$1000 for 300 cows.

But while swath grazing is profitable, it is not simple and it charges the producer with some homework to be done. In many cases, producers assume that swath grazing requires no inputs. In reality, little agronomic research has been conducted related to extended grazing per se.

One of the most important tasks for the producer is to know the characteristics of his soil. “One of the interesting things is that producers often feel that they don’t need to use fertilizer because they are grazing, but that is not necessarily so,” Dr. Baron said in an interview, explaining that manure spread through grazing is deposited above ground and often in patterns, so a good portion of the soil is unfertilized.

“I have had many calls where yields and carrying capacities have not met expectations,” he added. Dr. Baron says this could be due to anything from poor utilization to low yield. “We have found that some varieties and some species are less preferred, but you have to be sure that you have enough (nutrients). If your yield target is high, you have to have an optimum combination of manure and fertilizer.

“But many producers just rely on manure, many producers use the same land over and over again for swath grazing. You will have to soil test and determine what they need for nutrients.” He adds that grey wooded soils, in particular, need nutrient support as they are known to be low in nitrogen and in phosphorus.

Another important element of management is the choice of the crop to be seeded for swath grazing. Research conducted so far seems to favour triticale as one of the most optimal crops for swath grazing, followed by corn. However, Dr. Baron recommends the use of the highest yielding crop selected from trials in the producer’s region.

“Forage quality is important, too,” says Dr. Baron. “Crops such as corn are expensive to grow, but they do maintain forage quality throughout the winter. Beware of anti-quality characteristics of some crops.”

Selecting crops with high yield potential may well lay the groundwork for freeing up land for other crops to be grown.

“The higher carrying capacity of triticale and corn resulted in less land required to grow crops used in winter feeding than the control and swath-grazed barley since land requirement is the reciprocal of carrying capacity,” said the authors of a study, including Dr. Baron, published in the *Canadian Journal of Plant Science* in May 2014.

“Triticale was more consistent than corn from year to year in this regard. The significance is that as much as 50 per cent less land may be required by cow-calf producers to produce winter feed in central Alberta. This reduces the footprint of the cow herd, leaving the remaining land to be used for another economic alternative or for conservation purposes,” the study concluded.

While everybody has a favorite crop, crop rotation is important, as in any other cropping system. Crop rotation reduces the risk of crop diseases which can build up over time due to crop residues left behind. “Beware of cropping sequences from other farming operations,” cautions Dr. Baron.

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Swath grazing: More Than Just Frozen TV Dinner For Your Overwintering Cattle,

Continued

By: Mustafa Eric, AFSC

“Barley leaf diseases that reduce yield can be broken by alternating barley with oats, triticale or corn. Ergot has been detected in swath grazed barley and triticale. Brassicas are not likely resistant to and can carry prevalent canola diseases.”

Other management concerns that producers should take into consideration include:

- The location for swath grazing: Thin cows that are not strong enough to endure harsh winter weather will need more nutrition than the average overwintering animals, therefore, it is important that the grazing area should be suitable for monitoring the herd during the period of grazing;
- Availability of windbreaks, whether natural or portable, is an important factor to ensure that adverse weather will not hamper grazing for an extended period;
- Contingency plans should be made to be able to provide supplemental feed to grazing livestock in case conditions arise requiring emergency measures;
- Adequate steps need to be taken to protect the stock from wildlife intrusion;
- Availability of adequate water needs to be ensured in case snow is not enough or unsuitable as a water source.

Overall, swath grazing can reduce the winter feeding costs for cattle by up to 50 per cent, according to research conducted at the Lacombe Research Centre under Agriculture and Agri-Food Canada.

With beef prices fluctuating wildly over the last few years, more cattle producers might find higher efficiencies and margins in their operations through this practice. As forage experts continue working on developing new crop varieties to generate higher yields, it is believed there may be further upside potential for cattle producers to enhance the profitability of their operations by adopting swath grazing and other extended grazing practices.



Introducing PCBFA's 2018 Soil Health Series

By: Monika Benoit, PCBFA



"That nation that destroys its soil destroys itself." –Franklin D. Roosevelt

When we think about what's under our feet, what comes to mind? Dirt? Asphalt? Soil? It has been said that the soil beneath our feet is far more than just dirt, but it supports and drives all of life on earth. So when we think about how to manage production on our farms and ranches, our soil should be the first thing that comes to mind, a living, breathing thing! Soil is not an industrial commodity, and if not taken care of, it can be "used up." Soil is an ecosystem that we can learn about and work with to have healthy and productive land with minimal inputs.

This sparks the question of what does it mean to think of our soil as dynamic and alive? How do we take care of our soil? How do we know if our soil is healthy? Will our traditional soil tests tell us anything? Then comes the dollar questions, how does soil health affect farm and ranch profitability? Will managing our operations to improve soil health cost us money or make us more money? We are gearing up to answer these questions.

Over the past five years, soil health has been a major topic for much of PCBFA's work, and is the most requested topic for workshops and information from PCBFA's membership of over 200 producers. In response to this, we are pleased to launch a series of workshops and seminars: PCBFA's 2018 Soil Health Series. Our Soil Health Series will address questions about soil health and shed new light on the most important resource on our farms: our soil. We will be bringing world class speakers in to share their knowledge, as well as sharing the soil health research PCBFA has been doing right at home, on Peace Country farms and ranches with local producers.

To kick off the series, we hosted Part 1, A Tool For Building Soil Health: Cocktail Cover Crops on Feb 1st in Rycroft. This interactive seminar included a basic overview on what soil health is and the basics of soil biology. But, don't worry if you missed the first event– there's so much more to come! Upcoming event topics include livestock and crop integration, tools to assess your soil health, grazing management to create healthier soil and everything else soil related.

Keep an eye out for more events in PCBFA's 2018 Soil Health Series, coming this spring, summer and fall!



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Upcoming P

Event	Date & Time	Location
2018 Soil Health Series Part. 2: Livestock & Crop Integration	March 29th	St. Isidore Cultural Centre
Clear Hills County Ag Tradeshow	April 14th	Dave Shaw Memorial Complex Hines Creek
ABP Pasture Rejuvenation Project Field Day	June	Wanham PGR
2018 Soil Health Series Part 3: Grazing Management Field Day	June	TBD
Field Day at the Research Farm Including SHS Part 4: Hands on Soil Testing	July	Fairview Research Farm
2018 Soil Health Series Part 5: Cocktail Cover Crop Tour	Late July/Early August	TBD
2018 Soil Health Series Part 6: Soil Health School	August	Teepee Creek
3-Day Grazing School with Jim Gerrish	August	TBD



Up to date information can be found on our website!
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Testing of Some Peace Common Oat & Barley Varieties Versus

Soft White Wheat for Silage

By Akim Omokanye, PCBFA

Winter feed costs typically represent the largest portion of cow/calf expenses. In the Peace, oats and barley are the two most commonly used cool season cereals in beef cattle production. They are grown for greenfeed, swath grazing, pastures and silage, and very recently, they are being included in cocktail mixtures. In 2017, PCBFA tested some of the barley and oat varieties commonly grown in the Peace for greenfeed/silage against 4 soft white wheat varieties and bunker triticale. There is a lot more soft white wheat being used for silage in central/southern Alberta as it handles stresses better than barley and stands better. The down side is that harvest of soft white wheat is quite a bit later than traditional barley silage, but producers have reported 25-50% higher yields from soft white wheat grown for silage in those areas.

Objectives

1. To assess forage yield and quality of some common oat and barley varieties in parts of the Peace with newly registered varieties, which have been used as checks.
2. To compare forage-type oat and barley varieties that are commonly grown in the Peace with soft white wheat and bunker triticale for forage yield and beef cattle nutrient requirements.

Methods

- ◆ Project Site: Fairview Research Farm (NW5-82-3W6) on RR #35, MD of Fairview.
- ◆ Site soil information (0-6" depth): Soil tests done at Exova laboratory (Edmonton) prior to seeding showed pH = 5.8 and soil organic matter = 7.0 %.
- ◆ The field was cultivated (disked and harrowed) before seeding.
- ◆ Experimental Design: Randomized complete block design in 3 replications.
- ◆ Crops tested: 6 oats, 5 barley, 4 soft-white wheat and bunker triticale as shown below:

Oats:

CDC SO-1
RUFFIAN
AC MORGAN
DERBY
ORAVENA (new organic oat, Check)
CDC HAYMAKER (Check)

Barley:

CHAMPION - 2 row
LEGACY - 6 row
METCALFE - 2 row
CDC AUSTENSON- 2 row
CDC MAVERICK- 2 row (Check)

Soft white wheat:

AAC PARAMOUNT
SADASH
AAC INDUS
AC ANDREW

Triticale: BUNKER

- ◆ Seeding Date & Rate: Seeded May 30th; 300 plants/m² (27.8 plants/ft²) for oats and barley, and 370 plants/m² (34.2 plants/ft²) for soft white wheat and triticale.
- ◆ Seeding method: 6-row Fabro plot drill with 9" row spacing
- ◆ Fertility (actual lbs/acre): 89 N + 50 P + 29 K + 24 S
- ◆ Spraying: In-crop spraying was done once with Curtail M (800 ml/acre) + Fluroxyoyr (170ml/acre)
- ◆ Plant height, lodging, forage yield & forage quality were determined at the following crop growth stages:
Oats - milk stage; Barley -soft dough stage; Soft white wheat - late milk/early dough; and Triticale - late milk.
- ◆ Statistical analysis was done using Costat (2005) software.



Results and Interpretation

Forage Dry Matter (DM) Yield

The highest forage DM yield was from AAC Indus (10,240 lbs DM/acre). The 4 soft white wheat varieties and Bunker triticale seemed to have higher forage DM yield than all oat and barley varieties tested here. The 4 soft white wheat varieties and Bunker triticale produced >9000 lbs DM/acre, compared to 6830-8600 lbs DM/acre for oat and barley varieties as well as their checks.

For the oat varieties, CDC SO-I had the lowest forage DM yield. Metcalfe barley produced the lowest forage DM yield among the barley varieties tested.

The soft white wheat varieties tested here yielded 660-3410 lbs DM/acre more than oat varieties. The differences in forage DM yield between soft white wheat varieties and barley were 885-3301 lbs DM/acre in favour of soft white wheat varieties.

The forage DM yield of Bunker triticale as % of oats and barley were respectively 112-140% and 115-138%.

Forage Quality

Crude Protein (CP): The forage CP varied from 9.40% CP for bunker triticale to 12.7% CP for Champion barley. Except for the AC Andrew variety of soft white wheat (12.1% CP), barley varieties had higher forage CP values than oats, soft white wheat and bunker triticale.

Protein is a building block, and is a critical nutrient in all beef cattle diets. Although protein supplementation is often a high cost item in beef cattle feeding programs, sometimes protein supplementation is needed to meet the animal's nutrient requirements. Providing adequate protein in beef cattle diets is important for animal health and productivity as well as ranch profitability.

According to AAF (2004) and NRC (1996, 2000), the Beef Cow Rule of Thumb with protein is 7-9-11, which means an average mature beef cow requires a ration with CP of 7% in mid pregnancy, 9% in late pregnancy and 11% after calving. All varieties of oats, barley, soft white wheat and triticale tested here had adequate CP for dry gestating beef cows in mid to late pregnancy. For lactating beef cows, CDC Haymaker oat, Ruffian oat, Champion barley, CDC Maverick barley, Legacy barley, Metcalfe barley and AC Andrew soft white wheat met the 11% CP needed by this category of beef cows.

Signs of protein deficiency include reduced appetite, weight loss, poor growth, depressed reproductive performance, and reduced milk production.

Energy: Energy is probably the most important nutritional consideration in beef cattle production in cold climates. Energy is the nutrient required by cattle in the greatest amount, and usually accounts for the largest proportion of feed costs. Energy provides the body with the ability to do work. Work includes growth, lactation, reproduction, movement and feed digestion.

The total digestible nutrients (TDN) from all crops tested here was generally above 63%. Barley varieties seemed to have slightly higher TDN than varieties of oats, soft white wheat and triticale. Bunker triticale had similar TDN to oats.

All crops tested had adequate TDN for a dry gestating beef cow, which needs 55% TDN at the second-trimester and 60% TDN at third-trimester as recommended by AAF (2004) and NRC (1999, 2000). For a lactating beef cow, which requires 65% TDN, all varieties of barley and soft white wheat met and in most cases exceeded the TDN requirement of a nursing beef cow (AAF, 2004; NRC, 1999, 2000). All varieties of oats and bunker triticale fell short of meeting the 65% TDN needed by a lactating beef cow.

Table 1. Forage DM yield and quality (DM basis) of common oat and barley varieties in the Peace compared to Bunker triticale and 4 soft white wheat varieties tested in Fairview in 2017. NS - not significant at $P < 0.05$; * - significant at $P < 0.05$; CV - coefficient of variation

Measurements	OATS					BARLEY				SOFT WHITE WHEAT				BUNKER Triti-cale	Mean	Significance	LSD _{0.05}	CV %		
	CDC SO-1 CDC HAY- MAKER	RUFFIAN	ORAVENA	AC MORGAN	DERBY	CHAMPION	CDC MAVER- ICK	LEGACY CDC AUSTEN- SON	METCALFE	AAC PARA- MOUNT	AAC INDUS	SADASH	AC ANDREW							
Moisture, %	67.0	67.0	66.8	66.0	64.8	63.2	63.2	63.0	61.9	57.1	60.1	59.6	59.3	63.1	58.7	62.9	*	3.50	3.34	
DM Yield, lb/acre	8580	6830	7343	7823	8600	8031	7417	8156	7044	8375	6939	9437	10240	9778	9260	8210	*	2114	15.4	
CP, %	11.8	10.7	11.0	10.8	10.3	10.7	12.7	12.0	10.8	11.1	10.6	10.7	9.90	12.1	9.40	11.0	NS	2.77	11.7	
Soluble protein, %	51.4	57.4	55.1	62.3	51.4	57.4	58.9	43.0	66.0	43.8	63.6	62.0	66.0	63.9	72.4	57.5	*	10.1	8.25	
ADF-CP, %	1.28	1.19	1.33	1.30	1.29	1.07	1.15	1.24	1.17	1.22	1.29	1.14	1.07	1.38	1.35	1.22	NS	0.29	11.2	
NDF-CP, %	1.52	0.94	1.32	0.55	0.86	1.03	1.77	1.92	1.70	1.12	1.37	2.27	2.49	2.37	2.29	1.64	*	0.70	20.0	
UIP, %	24.2	21.2	22.4	18.8	24.2	21.2	20.5	28.4	16.9	27.4	28.0	18.1	18.9	16.9	13.7	21.2	*	5.05	11.1	
ADF, %	32.7	31.4	33.0	32.5	31.5	32.2	24.3	27.8	24.8	24.3	24.9	26.9	28.2	30.4	32.7	29.0	*	3.70	5.98	
NDF, %	59.0	55.6	55.0	56.4	55.9	55.0	44.0	50.3	45.5	46.8	45.8	48.6	49.8	47.3	50.9	50.9	*	4.95	4.56	
TDN, %	63.3	64.4	63.1	63.5	64.3	63.7	69.9	67.2	69.5	69.9	69.4	67.9	66.9	65.1	63.4	66.2	*	2.88	2.04	
NE _L , Mcal/kg	1.43	1.46	1.43	1.44	1.46	1.44	1.60	1.53	1.58	1.60	1.59	1.54	1.52	1.48	1.44	1.50	*	0	2.25	
NE _G , Mcal/kg	0.83	0.86	0.82	0.83	0.85	0.84	1.02	0.94	1.01	1.02	1.00	0.96	0.93	0.88	0.83	0.91	*	0.08	4.28	
NE _M , Mcal/kg	1.55	1.58	1.54	1.55	1.57	1.56	1.74	1.66	1.73	1.74	1.72	1.68	1.65	1.60	1.55	1.63	*	0.08	2.37	
Ca, %	0.31	0.29	0.25	0.32	0.28	0.31	0.28	0.36	0.43	0.25	0.25	0.17	0.21	0.20	0.22	0.27	*	0.05	9.35	
P, %	0.17	0.16	0.16	0.16	0.19	0.18	0.16	0.18	0.17	0.14	0.13	0.16	0.15	0.15	0.16	0.16	NS	0.04	12.4	
K, %	1.60	1.60	1.50	1.55	1.40	1.39	1.49	1.52	1.52	1.33	1.33	1.37	1.36	1.54	1.28	1.46	NS	0.39	12.5	
Mg, %	0.21	0.23	0.16	0.24	0.20	0.23	19.0	0.23	0.21	0.19	0.19	0.18	0.19	0.19	0.20	0.20	NS	0.05	11.9	
Na, %	0.62	0.54	0.46	0.62	0.47	0.32	0.20	0.28	0.18	0.16	0.20	0.01	0.02	0.01	0.01	0.25	*	0.22	40.7	
S, %	0.21	0.22	0.20	0.19	0.20	0.20	0.25	0.23	0.22	0.19	0.20	0.19	0.20	0.20	0.18	0.20	NS	0.03	8.76	
Cu, ppm	3.67	4.82	4.27	2.73	3.27	4.23	5.22	5.22	6.25	4.78	4.86	5.21	3.43	3.69	4.66	4.25	NS	1.85	19.7	
Fe, ppm	84.6	88.3	79.6	93.1	65.0	71.3	73.7	63.0	62.1	65.9	61.6	82.1	43.9	56.3	50.9	40.2	113	*	5.55	22.8
Zn, ppm	30.8	32.0	32.9	29.0	32.0	31.6	43.7	49.7	46.2	37.4	40.2	42.2	39.0	36.8	50.8	41.4	38.5	*	7.08	8.62
Mn, ppm	73.8	89.7	87.1	82.0	92.4	74.3	34.3	42.7	35.6	30.0	34.8	86.6	65.2	57.7	83.8	66.0	64.7	*	21.8	15.8
NFC, %	17.6	22.0	22.4	21.2	22.1	22.7	31.7	26.1	30.8	31.4	31.4	29.2	27.9	31.1	27.5	28.1	26.4	*	6.43	11.4
RFV	99	107	106	104	106	107	147	125	142	138	140	130	124	127	130	115	122	*	16.9	6.50

Testing of Some Peace Common Oat & Barley Varieties Versus

Soft White Wheat for Silage, *Continued*

By Akim Omokanye, PCBFA

All crop varieties tested had more than the recommended NE_M for mature beef cattle (1.19-1.28 Mcal/kg) and were within the 1.08-2.29 Mcal/kg required by growing and finishing calves. Similarly, all crop varieties were within the 0.53-1.37 Mcal/kg NE_G needed by growing and finishing calves.

Minerals: Macro minerals are those that are required in relatively large amounts. This group consists of Ca, P, Mg, S, K and salt (sodium chloride). The forage Ca content was highest for Legacy barley (0.43% Ca) and lowest for AAC Paramount soft white wheat (0.17% Ca). The forage P, K, Mg & S contents were not significantly different for crop varieties tested.

All crop varieties had sufficient forage Ca and Mg for dry gestating beef cows. The requirements of K and S by mature beef cattle were also met by all crops tested.

The forage Na content was generally higher for oats than barley, soft white wheat and triticale. Varieties of oats and barley tested here exceeded the 0.06-0.08% Na needed by dry gestating beef cows and 0.10% Na required by a lactating beef cow. All soft white wheats and triticale fell short of meeting the requirements of mature beef cattle.

Overall, all oats and 3 barley varieties (Champion, CDC Maverick and Legacy barley) were able to completely meet the requirements of Ca, P, K, Mg & S needed by a dry gestating beef cow. Other crop varieties would fall short of providing enough of these minerals to all categories of cattle.

Essential trace minerals are necessary for the well being of the animal. These are needed in sufficient quantities to promote health and to optimize production and reproduction. All trace minerals are toxic when fed in excessive quantities. In this study, the requirements of Fe (except for Bunker triticale & AAC Indus soft white wheat) and Zn (except for Oravena oats) have both been met by all crop varieties tested here. The Mn requirement by mature beef cattle (40 ppm) was mostly met by crop varieties tested. All crop varieties did not have sufficient forage Cu for mature beef cattle (10 ppm).

Relative Feed Value (RFV) - A prediction of feeding value that combines estimated intake (NDF) and estimated digestibility (ADF) into a single index. As expected, in this study, Bunker triticale, barley and soft white wheat had higher RFVs than oats.

Conclusion

The common varieties of oats and barley grown in the Peace tested here compared well with the newly registered varieties in terms of forage yield and quality. However, the newly registered oats or barley may in some cases have slightly higher forage quality indicators than their counterparts. For instance CDC hay-maker oats seemed to have higher forage CP than other oats. Bunker triticale had more forage DM than oats and barley. Overall, the soft white wheat varieties tested here yielded 660-3410 lbs DM/acre more than oat varieties. The differences in forage DM yield between soft white wheat varieties and barley were 885-3301 lbs DM/acre in favour of soft white wheat varieties. The forage DM yield of Bunker triticale as % of oats and barley was 112-140% and 115-138%, respectively.

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Alberta Environmental Farm Plans

Many Alberta producers are wondering if they need a current Environmental Farm Plan (EFP). The EFP is meant to be reviewed and upgraded regularly for each operation. It's simple to do. The program is coordinated by the Agriculture Research and Extension Council of Alberta (ARECA) and EFP technicians are available across the province. A completed EFP is required for the On-Farm Stewardship categories of the Growing Forward 2 program and upcoming Canadian Agricultural Partnership Funding Program. Stewardship is being tied to business opportunities and it is good to be prepared. There are many other reasons to complete an EFP too, including having a hard copy record of the environmental status of your operation, becoming more aware of the rules and regulations concerning the environmental impacts on farms, including protecting water resources and air quality. EFPs can also contribute to the environmental sustainability of crop and livestock operations. Updating your EFP shows your commitment to being good stewards of the land and your commitment to meeting consumer expectations and food safety. Establishing that food is produced in an environmentally sustainable way in Alberta, also positions Alberta to be competitive in world markets.

Producers can use an online workbook. This workbook carries data entered to all areas of the plan where it is needed, provides quick access to information sources, ensures each section is complete prior to moving to the next and allows the EFP technician to see what is completed, answer questions and assist with finishing the plan.

To get started contact the ARECA office at 780-612-9712 or info@albertaefp.com. You will then be matched to an available EFP Technician in your area.

Recent Changes To Alberta EFP Conduct

- Species At Risk Chapter Added
- EFP are now to be done digitally
- Renewal Term changed to 10 years
-Change as of April 1st 2018

**Why Develop an EFP**

- ◆ Improve farm health and safety
- ◆ To protect water resources, air quality.
- ◆ To preserve soil and biodiversity
- ◆ Building acceptance of the operation among neighbours and the public
- ◆ Increasing personal satisfaction and knowledge
- ◆ Adding value to the farm property
- ◆ Agricultural sustainability
- ◆ To reduce farm inputs and decrease storage time of herbicides, insecticides, fertilizers and fuel
- ◆ To demonstrate to the public, governments, regulators, lenders and/or investors that you are managing your environmental risks
- ◆ To increase your understanding of your legal requirements related to environmental issues.
- ◆ To identify what you are already doing well and pinpoint where improvements could be made.



PCBFA is currently planning

EFP Open House Workshops

through the year, across the Peace Region. Make sure to keep an eye on our website, or subscribe for event reminders, to know when we are coming to your area!



Canadian Agricultural Partnership

- Simplified and streamlined to make accessing funding easier
- Enhanced key funding programs that help farmers regain their farms integrity, especially when the risk is out of their financial control
- Opening April 1st, 2018

You can ask any PCBFA staff member, or check out the Agriculture and Agri-food Canada website, for more information



The Canadian Agricultural Partnership is a five-year, \$3 billion investment by federal, provincial and territorial governments to strengthen the agriculture and agri-food sector.

Growing Forward 2 Programs Still Open



Programs Accepting Applications

- * Irrigation Efficiency
- * On-Farm Solar Photovoltaics
- * On-Farm Water Management
- * Traceability Technology Adoption

Programs Not Accepting Applications

- * Agri Processing Automation and Efficiency - Crop
- * Agri Processing Product and Market Development - Crop
- * Agriculture Watershed Enhancement
- * Animal Health Biosecurity Delivery Agent
- * Animal Health Biosecurity Producer
- * Animal Health and Welfare Emergency Preparedness Delivery Agent
- * Business Opportunity
- * Business Management Skills Development
- * Confined Feeding Operation Stewardship
- * Food Safety Systems Delivery Agent
- * Food Safety Systems Producer
- * Irrigation Conveyance Works
- * Livestock Welfare Delivery Agent
- * Livestock Welfare Producer
- * On-Farm Energy Management
- * On-Farm Stewardship
- * Regional Water Supply
- * Traceability Pilot
- * Traceability Training
- * Accelerating Innovation
- * Agri Processing Automation and Efficiency - Livestock
- * Agri Processing Product and Market Development - Livestock
- * Food Safety Systems Processor
- * Livestock Welfare Processor

Growing Forward 2 Programs are continuously updated and/or changes are made to the programs. All information on GF2 programs can be found at www.growingforward.alberta.ca

The best way to stay up to date on all things GF2 is to subscribe to the programs that you are interested in. The subscribe function can be found on the right side of the GF2 home screen.

PCBFA staff would be happy to help with your GF2 applications, so give us a call!

As Of February 2018



The Western Canada Conference on Soil Health and Grazing was a Huge Success!

By: Olivia Sederburg, Chinook Applied Research Association



A decision to combine Soil Health with Grazing was supported by producers from all across Western Canada as they travelled to the sold out conference in Edmonton, December 5th to 7th. Conference participants had the opportunity to hear scientists, specialists and producers discuss the importance of soil health – assessing specific soils, recognizing and remediating problems as well as the benefits of have a strong soil base. The beneficial role that livestock can play in a production system was discussed along with other strategies related to building soil. The final day of the conference focused on strategies to maintain grazing resources and understanding the significance of healthy soils within a grazing system.



Left– The Conference Planning Committee. Photo Courtesy of North Peace Applied Research Association.

Right– Over 550 individuals from across Western Canada attended the conference. Photo Courtesy of Codie lee Yasieniuk, PCBFA.

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