

# LIVESTOCK & FORAGE GAZETTE



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*Producer Perspective: Keith Peters looked to winter grazing to reduce production costs*

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## EDITOR'S NOTE

In this edition of the *Gazette* we focus on winter feeding and management. Read on for practical research updates and alternatives and opportunities being employed by producers across the province. As well, we present important upcoming industry events, web resources and programs available to Saskatchewan producers.

Looking for a practical, handy and 'cheap' Christmas gift for your favorite 'cow feeding/grazing guru' neighbour or family member? Why not pass along their name and we'll add them to our mail or email distribution list. Contact the Saskatchewan Forage Council at (306) 966-2148 or [jbruynooghe@saskforage.ca](mailto:jbruynooghe@saskforage.ca).

Photo credits for this issue go to Western Beef Development Centre, Bruce and Patti Chern, Saskatchewan Agriculture and Food, Western College of Veterinary Medicine, and the Saskatchewan Watershed Authority.

Until next time,  
 Janice Bruynooghe  
 Livestock & Forage Gazette  
 Editor

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## PRODUCER PERSPECTIVE:

### ***Project Funding Assists with Wintering Options***

*Submitted by Swift Current Creek Watershed Stewards Agri-Environmental Group Plan*

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#### **Winter grazing cuts production costs**

Keith Peters finally took the plunge and winter grazed 40 acres of corn aided by a new winter water bowl, portable windbreaks and electric fence. He seeded the corn the end of May and was able to feed 165 cows for roughly six weeks from December 1 until the third week in January. “The only interruption,” he says, “was when the temperature turned bitterly cold and we had to move the cows closer to home to provide additional protection.”



*Peters' portable windbreaks*

Peters was looking for a new grazing system to try to reduce the rising cost of production. “My equipment is old, the cost of diesel fuel is high and I have been wintering the cows 5 miles from home,” says the Swift Current area rancher. “The corn grazing was such a success I was interested in doing more winter grazing but needed information and assistance with development of a remote winter water source and wind shelter. Brad White, Agri-Environmental Group Plan Agrologist with the Swift Current Creek Watershed Stewards (SCCWS) had contacted us earlier in the year to discuss the AEGP so we contacted him for assistance.” The Canada-Saskatchewan Farm Stewardship Program, through the Agri-Environmental Group Plan (AEGP) funded fifty percent of the cost of Peters’ winter water bowl and portable windbreaks.

#### **Project protects water source and improves herd health**

For years the Bench Hutterite Colony northwest of Shaunavon wintered their cow herd along the Jones creek, but cow boss Jack Kleinsasser was concerned about the damage to the riparian area as well as possible manure contamination of the creek during spring runoff. Kleinsasser contacted Brad White to discuss several options. Simply by laying a few hundred feet of pipeline to tap into the colony’s existing water system, adding a new water bowl and several portable windbreaks the colony was able to move its 150 head cow herd away from the banks of Jones Creek to cropland located outside the valley. Fifty percent of the cost associated with the new wintering site was funded through the Canada Saskatchewan Farm Stewardship Program with technical assistance from the Agri-environmental Group Plan (AEGP).

“We achieved a lot more than just improving and protecting our environment,” says



*Jack Kleinsasser - Bench Hutterite Colony*

Kleinsasser. “The new system forced the cows to walk farther for water providing exercise and improving their condition. By moving the windbreaks we were able to better distribute the manure and will save on fertilizer costs. Having



*Portable windbreaks provide wintering options for Bench Hutterite Colony*

the portable windbreaks also allowed us to move the cows to clean ground just prior to calving which offers improved herd health and helps to reduce calf sickness.”

In the future, the Colony plans to build more windbreaks. While assessing the success of the project, Kleinsasser considers the man made

shelter inferior to that of natural habitat in the creek valley resulting in higher feed intake. More windbreaks should eliminate the problem in the future.

*The Canada Saskatchewan Farm Stewardship Program delivered by SCCWS has assisted many area farmers and ranchers adopt new livestock management systems and new technologies. SCCWS is a volunteer, not-for-profit corporation formed in 2002 by concerned farmers, ranchers and other residents living in the Swift Current Creek and Rush Lake Creek Watersheds. Their objective is to enhance water quality and stream health of the Swift Current Creek. Eligible projects include corral relocation away from riparian areas; solar water systems; forage buffer strips; wintering site improvement projects including fencing, winter watering systems & portable wind breaks; and fencing for rotational grazing of riparian areas.*

*Brad White, P.Ag., AEGP Agrologist, Swift Current Creek Watershed Stewards can be contacted at 306-297-2215 or check out their website at [www.sccws.com](http://www.sccws.com).*

## **WEB RESOURCES**

*The following resources are available online, providing valuable information on topics related to livestock and forage management.*

### **Beef Info Net ([www.vido.org/beefinfonet](http://www.vido.org/beefinfonet))**

\* Beef InfoNet provides comprehensive and up-to-date information on the issues facing the Canadian beef industry today. Developed by a Canadian collective of beef industry members, the website indexes fact sheets, reports, case studies and video on a wide spectrum of beef industry topics, from nutrition and disease to economics and food safety. The website is maintained by the Vaccine and Infectious Disease Organization (VIDO) Beef Technical Group

### **More Than a Cow?**

#### **([www.agt.net/public/jross/beefprod.htm](http://www.agt.net/public/jross/beefprod.htm))**

\* This website answers the question, “When is a cow more than a cow?” and promotes the fact that all parts of beef cattle are utilized to produce important byproducts that are used everyday. Articles and fact sheets on industry issues presented as well.

### **[www.Foragebeef.ca](http://www.Foragebeef.ca)**

\* A web site devoted to meeting the information needs of the cow calf and forage producer, this site highlights and summarizes forage and beef research that is relevant to producers. [www.Foragebeef.ca](http://www.Foragebeef.ca) has its own internal search engine which allows the viewer to quickly locate the information on the site. The Alberta Beef Producers, Canada Alberta Beef Research Fund, Saskatchewan Agriculture Development Fund, Alberta Agriculture, Saskatchewan Agriculture and Food, Manitoba Agriculture along with Matching Investment Initiatives Fund of Agriculture and Agri-Food Canada are all supporting partners in the development of the web site.

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## WINTER FEEDING BEEF CATTLE

*Submitted by Murray Feist, PAg, Ruminant Nutritionist, Saskatchewan Agriculture and Food*

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### Introduction

A balanced approach to winter feeding incorporates three basic checks: body condition score according to stage of production/gestation, forage quality, and a contingency plan to deal with severe winter weather.

### Body Condition Scoring

A proper plan starts by managing the cattle entering the winter feeding period for body condition score. According to beef nutrition guidelines, body condition score (BCS) targets are 2.5 and 3 (Canadian scoring) for calving and re-breeding of cattle. Cattle scoring less than three out of five will require additional weight gains to improve condition. In order to gain 1/2 BCS (Canadian Scoring), a beef cow has to gain 8% of its current body weight. Therefore, a 1000 pound cow will have to gain 80 pounds in order to gain 1/2 a condition score (1000 pounds x 8% = 80 pounds). Alternatively, a loss of 7% of body weight equals a loss of 1/2 BCS. Economically, it is better to feed a maintenance ration to a wintering cow than to feed a ration to gain weight and condition. Feeding for gains will require extra energy supplementation, often provided by feed grains and supplements and increasing the cost of the ration.

Sorting the cattle into groups according to BCS is also important. Under ideal conditions, the cow herd should be grouped into low BCS cows and maintenance cows to allow for targeted feeding needs. However, this separation into groups may not be possible due to pen or pasture space limitations or other management considerations. At best, it is recommended that replacement or first-calf heifers be segregated into their own paddocks to allow for feeding a ration formulated for their nutritional needs.

### Feeding for Stage of Gestation

The stage of gestation is crucial in determining nutritional needs and requirements. Mid-gestation cattle have energy and protein requirements that are considerably less than that of late gestation cattle. The increase in energy



requirements from mid- to late gestation is approximately 20% from 45-50% total digestible nutrients (TDN) to 54-56% TDN (dry matter basis). This increase is considerable as the cow is partitioning more energy to the gestating fetus as well as maintaining her own energy requirement. This increase in energy demands often results in an increase in either feed intake or requires a higher energy dense feed such as feed grains or concentrates. Therefore, lower quality forages should be targeted to mid-gestation diet, particularly for cattle with a 3 or better BCS. However, should mid-gestation cattle be scored less than 3 BCS, extra feed energy to the cattle should be provided as this is when gains are cheaper and the energy requirement for maintenance is lower than for the last trimester. Regardless, putting condition on cattle from mid- to late gestation in order to improve the BCS will require feed energy supplementation, and as a result, a higher costing diet.

### Forages and Feed Testing

Body condition score and stage of gestation are crucial factors when planning the use of forage inventories. Winter diets based on straw as the forage require different considerations than rations based on early cut alfalfa hay. Low BCS scoring cows in mid-gestation will require energy supplementation when fed a straw based diet, and management plans should incorporate higher quality forage or feed grain/concentrates for the last third of gestation. However, should inventories be adequate, it will be easier for cows to gain 1/2 BCS when fed a

higher quality forage as they lessen the demand to supplement with energy from concentrates. That stated, ration costs for straw or chaff based diets, when properly balanced often can be quite economical with a few considerations.

Often, straw and chaff based diets supplemented with additional protein and minerals may be considered adequate for cows in good BCS condition. This however, may require incorporating higher quality forages or energy concentrates when needed.

When feeding straw and chaff, a maximum daily intake should be limited to 1.25% of body weight. The lower critical temperature of cattle ranges from -10°C to -20°C, and in periods of severe weather it is not uncommon for intake to increase by up to 30%. If cows are forced to eat 30% more straw there will be a risk of ruminal and stomach impaction (a fatal condition). Restricting maximum straw intake to 1.25% allows room in the ration for supplementation with feed grains, commercial supplements or higher quality forages to accommodate increase in intakes. Straw also is deficient in energy. During the winter months, cattle will find it difficult to consume enough straw to maintain body condition score and stay warm. Thus, extra energy from feed higher quality forages, or energy supplements is necessary. Finally, straw does not contain enough protein to maintain adequate rumen microbial health, requiring protein supplementation. Ensure that additional high quality forages and feed grains are available for severe weather and late gestation cattle when using straw or chaff as the forage base during mid-gestation.

Grass and legume forages are common ingredients in Saskatchewan cow rations. The variability between legumes and grasses, harvest conditions, and variations in the growing season often make it difficult to predict the nutritional quality of these feeds. Average feed nutrient values often are quoted when balancing rations based on grass and legume forages - however, variability can be quite large and a feed analysis is preferred. A feed analysis will show protein and energy levels in the forage and will assist in deciding whether or not extra supplementation is required. In some cases, a feed analysis may prevent the overfeeding of extra grains or supplements and prevent unnecessary increased ration costs.

### Conclusion

As livestock producers, animal health often is our first concern, ensuring that cattle are fed for the winter according to their production status and body condition score. Economical winter feeding programs occur when feed inventories are utilized in a flexible manner allowing for changes in weight, gestation status and severe environmental changes. With proper foresight, planning and feed analysis, an economical, healthy winter feeding program can be accomplished.

*The author can be contacted through Saskatchewan Agriculture and Food's Agriculture Knowledge Centre at 1-866-457-2377.*

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downloaded from the  
following websites

[www.saskforage.ca](http://www.saskforage.ca)  
[www.wbdc.sk.ca](http://www.wbdc.sk.ca)  
[www.swa.ca](http://www.swa.ca)  
[www.pcap-sk.org](http://www.pcap-sk.org)  
[www.skstockgrowers.com](http://www.skstockgrowers.com)

## NOVEMBER 2007 Trivia Question ?

### What is the Impact of the Rising Canadian Dollar on Cattle Prices?

*It is the beginning of October and in Nebraska 550 lb. steers are worth US\$1.30 and the Canadian dollar is trading at US\$0.95. The market holds mainly steady throughout the month and at the end of October 550 lb. steers are still at \$1.30 in Nebraska, however the Canadian dollar is now trading at US\$1.05. What is the difference in the value per head in Canadian funds?*

*See page 7 for answer.*

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# NATIONAL SUSTAINABLE GRAZING MENTORSHIP PROJECT: ENHANCING PROFITS AND THE ENVIRONMENT THROUGH GRAZING MANAGEMENT

*Submitted by Ross Macdonald, SGMP Coordinator, Saskatchewan Forage Council*

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With funding provided by Agriculture and Agri-Food Canada's Greencover Canada Technical Assistance Component (TAC) and administered across Canada by the Canadian Cattlemen's Association (CCA), livestock producers now have the ability to access a network of grazing mentors who have been assembled to provide Saskatchewan cattle producers the opportunity to discuss their grazing management situations and future plans. The Saskatchewan Forage Council is coordinating Saskatchewan's portion of the National Sustainable Grazing Mentorship Project which has been designed to provide insight for successful grazing management and avoid costly mistakes.

## **Who are the Grazing Mentors?**

Respected producers with extensive grazing management experience and knowledge act as mentors to suggest grazing management options to help you improve your profits, your forage productivity and your land and water resources.

## **The Mentor Experience**

Bruce and Patti Chern operate Golden View Ranch Ltd. near Stockholm, Saskatchewan. The 500 cow/calf operation retains their calves to sell as yearlings. Some yearlings are fattened under a natural program and harvested for a branded beef program. The Chern's have developed a respected reputation for quality grazing management and have agreed to provide mentorship through the National Sustainable Grazing Mentorship Program. When asked about their motives in becoming involved with the Program, Bruce stated, *"I am passionate about people who care and want to stay in the ranching business."* The Chern's manage their own ranch and are involved with developing grazing systems for several large ranches in the area. *"The grazing land is managed so it will not be seeded again. We use*

*a lot of legumes in our grazing lands to capture nitrogen. Our bloat risk is managed with*



*understanding forage properties rather than chemicals,"* says Bruce Chern.

The Chern's have enjoyed their mentoring experiences and hope to see more interest in the program. With the Saskatchewan Forage Council currently coordinating the program in Saskatchewan, Randy and Sheena Keep contacted the Saskatchewan Forage Council to take advantage of the opportunity to be mentored by the Chern's. Bruce indicated that

*"Randy and Sheena are very keen and they have a lot of opportunity. We really enjoy working with them as they want to make a difference in the industry."*

## **The Mentee Experience**

Randy and Sheena Keep, along with their two children, ranch near Punnichy, Saskatchewan. Since 2005, the Keeps have been making the transition from mixed farming to ranching. Looking for someone to discuss some of their future grazing and management decisions with, the Keeps initiated a mentorship with Bruce and Patti Chern.

*"While getting things in place the key has been the many helpful and positive people willing to share information and ideas. This was further reinforced with the mentorship program and partnering with Bruce & Patti Chern from*

*Stockholm. A whole new connection is now available to us. Visits, phone calls, emails, newsletters, tours, meetings etc. All this helps when facing the challenges of an uncertain industry and the steep learning curve. We hope this program continues so other connections can be made. Meeting with other mentors and producers in this program might also be worthwhile."*

### **How Does the SGMP Work?**

A mentor will visit the ranch/farm to discuss grazing resources, opportunities and challenges. Mentors may make suggestions for grazing system design/modification and helpful tips for implementation. Mentors also provide peer support and continued communication to aide in decision making and implementation of grazing management choices. Each mentor will be available for approximately 16 hours of mentoring.

### **Cost?**

Producers pay \$100 to initiate the mentor process and SGMP funding, available through the Saskatchewan Forage Council, covers the remainder of the mentor's time and travel expenses.

### **To Become Involved?**

Contact the Saskatchewan Forage Council at (306) 966-2148 or visit [www.saskforage.ca](http://www.saskforage.ca) for more information.

**NOVEMBER 2007**

## **Trivia Question Answer**

550 lb. x US\$1.30 = US\$715 per head

US\$715 / CDN\$0.95 = CDN\$752.63 per head  
(beginning of October)

US\$715 / CDN\$1.05 = CDN\$680.95 per head  
(end of October)

The increase of \$0.10 in the value of the Canadian dollar has resulted in the 550 lb. steer being worth \$71.68 less in Canadian funds while the American market saw no change in price.

## **Livestock & Forage Gazette Reader Survey Winners**



JeanAnne Prysliak (left) with the Saskatchewan Watershed Authority presents Rodney & Linda Trytten of Kyle, Saskatchewan, with a \$500 cheque towards grazing management expenditures. The Tryttens were winners of our November 2006 Reader Survey which was sponsored by Ducks Unlimited Canada and the Saskatchewan Watershed Authority.



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or visit [www.saskforage.ca](http://www.saskforage.ca)

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## THE ABC'S OF BALE GRAZING

*Submitted by Lorne Klein, PAg and Al Foster, PAg, Saskatchewan Agriculture and Food*

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Bale grazing is simply feeding hay and straw bales extensively on pasture, hayland or cropland in the winter instead of feeding in corrals. Bale grazing increases soil fertility where bales are fed and will reduce corral cleanout costs. It also has the potential to reduce fuel and machinery expenses.

Most often bales are placed on seeded pastures or left in hay fields where they were made. After bale grazing, even with good livestock control and feed clean-up, there will likely be a mat of soiled and left over material. If bales are placed on annual cropland, this layer would probably be difficult to seed through the following spring. Where residue is a problem the area may need to be harrowed in early spring.

Most often bales are placed on their round side, the same as when ejected from the baler. This way the bales stay relatively intact after the twines are removed. Livestock are usually limited to a 2-3 day feed supply to minimize wasting. An electric fence is used to limit the number of bales cattle can access. With changes in temperature, the feed cleanup should be monitored and moving done accordingly.

The preferred seeded perennial fields for bale grazing will have at least one rhizomatous grass such as smooth brome, quackgrass, or Kentucky bluegrass. If a relatively thick layer of material is left behind after grazing, these grasses have a greater chance of growing through and filling in again. Native prairie is normally not the preferred location for bale grazing because this may result in the invasion of tame forage and weed species.

Ideally the best location for bale grazing is a site that is easy to monitor, at or near where the bales were made, and fenced with a water source.

Snow can be used as a water source once a sufficient amount has fallen. The site should also provide protection from wind and have power and a handling facility close if needed. Solar powered fences are an option where power is not available.



Bales can be placed during summer, fall, or winter. Some producers prefer to have bales in place prior to freezing weather, especially when they intend to remove the plastic twine prior to freezing rain or wet snow in fall. In cases where sisal twine is used, it may be left on the bale to rot in the field after grazing.

On parcels of land with variable soil conditions and/or rolling topography, producers may want to place bales on areas where the nutrients from manure and left over litter from the bales will provide the greatest benefit. One example would be placing bales on hills tops where there is lower fertility and shallow topsoil.

Using alfalfa/grass hay bales averaging 1300 lbs, research is suggesting a bale density of 25 bales/acre. To get this density, place bales in a grid on 40 foot centres. At this rate, about 75 lbs/acre of nitrogen will accumulate in the soil profile the following spring. This is considered a safe and recommended rate for fertilizer application.

Some producers have placed the entire winter supply of bales in the field prior to winter. Where there is a concern of deep snow limiting cattle access to feed, bales can be placed weekly or monthly throughout the winter. By doing this some of the cost advantage is lost because bales will be handled an extra time but it reduces the risk when bad weather hits.

*Lorne Klein can be contacted at (306) 848-2382 or Al Foster at (306) 878-8890.*

## THE SOARING CANADIAN DOLLAR: FEELIN' THE PINCH

Submitted by Sandy Russell, Senior Livestock Industry Analyst, Saskatchewan Agriculture and Food

Being involved in an export dependent industry means that all cattle producers are acutely aware of movements in the Canadian dollar. Generally speaking most of us know that downward movement in the dollar is positive on market prices and upward movement is negative for cattle prices. But do we truly know how significant an impact the Canadian dollar can have on cattle prices in Saskatchewan and how that determines what you put in your pocket after the sale.

On September 20 the loonie hit parity with the US dollar and since that time it has continued to soar, hitting all-time record highs in late October. While this is good news for those who like to travel and shop south of the border, for an export dependent cattle industry the effect has been severe. No matter what Canadian cattle or beef market you are talking about, prices are struggling and every

sector of the industry is feeling the pinch from a record high dollar. So just how significant is the impact of the dollar on the Canadian cattle producer?

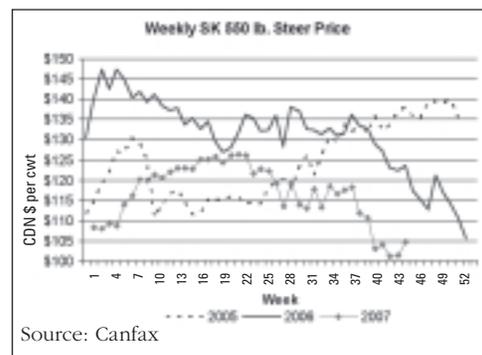


To put this into perspective, let's look at the market south of the border and relate that back to Canadian producers. In Nebraska, 550 lb. weaned calves were trading for \$125 per cwt at the end of October and for comparison sake let's hold that market price steady. The Canadian dollar at that time was trading at \$1.05 and so that calf was worth \$119 per cwt in Canadian funds. Of course, back on September 20 when the dollar was at par, that calf was worth \$125 per cwt in both American and Canadian dollars. So in just over one month alone, the rise in the Canadian dollar equated to a drop in value of \$6 per cwt or \$33 Canadian dollars for that steer.

If we look back to May, the Canadian dollar was valued at US\$0.90. Again assuming a constant market price in Nebraska, that same calf would be worth \$139 per cwt in Canadian funds. With all other things constant, the \$0.15 rise in the Canadian dollar in the

last 5 1/2 months has equated to a \$20 per cwt difference in the 550 lb. calf price or a decrease of \$110 per head just because of the climb in the value of the Canadian dollar alone. Remember, in this example, while the Canadian value of that Nebraska steer dropped \$110 the value in American funds remained unchanged.

In reality we know that markets don't stay constant but this does show the impact that the movement in the Canadian dollar alone has on the value of cattle. Knowing that Canadian cattle markets are based off of US cattle prices one can start to see the considerable affect that the rise in the loonie itself has had on Canadian feeder cattle markets. And that doesn't take into account rising feed grain prices which have also had a considerable impact on feeder cattle prices in the past year.



As a cattle producer, the concern is the long term influence this will have on the Canadian industry and its ability to remain competitive and profitable. This appreciation of the Canadian dollar began back in 2002. So, it wasn't that long ago that Canadian cattle producers benefited from a dollar worth \$0.62 in US funds and because of that had significant competitive advantages over their US counterparts.

Current information indicates that a strong Canadian dollar relative to US currency is likely here for the near future. However, we know that the current economic situation that exists today will not remain. It is inevitable that conditions will change. The million dollar question that every person involved in the cattle business wants to know is... 'When will it change for the better?'

*Sandy Russell is the Senior Livestock Industry Analyst for the Livestock Development Branch in Saskatoon. Sandy can be reached at 306-933-5570 or srussell@agr.gov.sk.ca.*

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# RESEARCH ROUNDUP

## Winter Feeding Systems for Beef Cattle

*Submitted by Breeanna Kelln, Graduate Student, University of Saskatchewan  
and Dr. Bart Lardner, Senior Scientist, Western Beef Development Centre*

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Managing the pregnant beef cow during the winter feeding season represents a large cost for Western Canadian cow/calf producers. Many producers are looking to decrease production costs with feeding systems that utilize annual crops, such as swath grazing, bale grazing, and grazing crop residue. The impact of these alternative winter feeding systems on cow performance, soil nutrient cycling and compaction, as well as subsequent crop yield are significant concerns for many producers.

In 2005, a 3-year study was initiated at Termuende Research Farm (TRF), in order to compare winter feeding systems and their effects on cow performance, soil nutrient cycling, subsequent crop growth, and the economic efficiency of each system. Wintering systems compared included swath grazing (SG), bale grazing (BG), straw/chaff grazing (ST/CH) and traditional drylot feeding (DL). In early June of each year, 100 acres was seeded to forage barley (cv Ranger) along with 50 lbs actual nitrogen per acre. Each fall the field was sub-divided into 10 separate paddocks using electric fence. Crops were swathed at soft dough stage for either use as either greenfeed bales or swath grazing. The barley grain from each straw/chaff paddock was harvested late September and the straw/chaff was bunched into piles using a whole buncher. Round green feed bales were fed each year in the drylot system.

### Cattle Management and Performance

Each year 180 cattle were randomly allocated to one of four winter feeding systems and each group of cows was allocated feed according to maintenance requirements. Each animal group was confined to the 10-acre paddock, and managed using electric fence to control access to feed. All groups were fed on a 3-day schedule, with water, salt and mineral supplied on a daily basis. Portable wind shelters were also provided to all groups. The 2005-06 trial period lasted 76 days due to available straw/chaff feed. Cows on the swath graze and bale graze systems were able

to graze an extra 19 days for an average of 142.5 cow days/acre for these systems and 114 cow days/acre for the straw/chaff system. The 2006-07 trial period only lasted 21 days due to heavy freezing rains and winter storms limiting accessibility of the feed. However, cows were allowed back on the fields in early spring for another 21 day period until all feed was utilized.

Feed quality was sampled from each paddock throughout the feeding period to monitor quality



as the winter progressed. Average TDN energy levels prior to grazing for SG, ST/CH, BG and DL were 65%, 50%, 66% and 67%, respectively. Crude protein levels were 13%, 9%, 13%, and 12 % for SG ST/CH, BG and DL. Quality of the feed decreased marginally throughout the winter, with an average decrease of 4 % TDN and 1% crude protein. In addition, straw/chaff cows were supplemented with a 14 % crude protein range pellet.

Cows on the swath grazing treatment had slightly reduced gains in year one of the study however, in the second year all cows had positive gains in each system. Body condition score and backfat measurements were minimally affected by treatment with little differences observed between treatment groups. Feeding systems had no effect on reproductive performance over the two years. Dry matter intake (DMI) was similar across all

groups with bale graze and drylot cows having slightly higher DMI than the other groups.

### **Soil Nutrient Cycling and Soil Compaction**

Soil samples were taken from each wintering site in the spring of 2006 at upper, mid and low slope positions and analyzed for nitrogen ( $\text{NO}_3$ ), phosphorus (P) and potassium (K). In addition, a 32 point grid (6.1m X 7.6m) was applied on each wintering site to create a map of soil nutrient distribution and availability throughout each paddocks using digital analysis programming.

Soil extractable nitrate nitrogen ( $\text{NO}_3$ ) levels were seen to increase in samples taken closer to low slope positions compared to high slope positions. In all 3 extensive field feeding systems,



levels of  $\text{NO}_3$  averaged 40 kg per ha at high slope positions and increased to levels ranging from 65-70 kg per ha at low slope positions demonstrating the influence of topography on soil nutrient profile. Soil phosphorous (P) distribution showed marked differences between treatments, with higher levels of P surrounding the feeding sites in each treatment. Straw/chaff grazing areas showed the greatest visual distribution of P with increased levels of P running horizontally through the feeding site correlating with feeding sites.

Soil compaction was evaluated each spring following the winter feeding period. Bale grazing had the greatest effect on compaction and straw/chaff groups having the least effect at on soil density at the 5 cm soil depth. Soil density was decreased nearly 50% by the straw chaff group when compared to the bale graze group, indicating definite differences in soil tilth between

treatments. This difference is possibly due to the increase in distribution of straw/chaff feed throughout the paddocks. Although differences in compaction were seen between treatments, overall compaction was not an issue in terms of crop production the following year.

### **Crop Yield**

Crop yield estimates were determined after winter feeding to evaluate the effect of field feeding on crop biomass production. Biomass differed between feeding systems with the barley crop on BG sites yielding 13% greater than ST/CH sites, however the ST/CH sites still produced very well at 2.8 tons/acre. This difference could be attributed to the large carbon mass associated with the straw which may have immobilized available plant nutrients.

### **Winter Feed System Costs**

Costs calculated for each system include both crop production and grazing costs. Cost calculations were based on custom rates and included field preparation, seeding, fertilizing, spraying, swathing, baling, and combining. Labour included total hours for moving fences, cows, windbreaks, and daily watering. On average, field feeding systems lowered winter feed costs by \$0.40 per cow per day, supporting the economic benefits of field feeding.

### **Implications**

From these results of the two-year winter feeding trial, it can be suggested that feeding cattle throughout the winter on annual forage crops is a viable alternative for producers to decrease winter feed costs and increase the utilization of manure nutrients. Heavy snowfall in January 2006 and cold temperatures throughout the winter appeared to have no impact on cow performance. Feed quality during the winter was sufficient, allowing for minimal to no cow weight loss throughout the feeding period. The BG feeding sites grew greater crop biomass compared to the SG or ST/CH feeding sites. This may have been due to higher levels of nitrogen in the greenfeed bale residue or the high carbon levels associated with the straw/chaff residue immobilizing plant available nitrogen for a period of time. Costs were significantly decreased by the field feeding systems, thus validating the economic benefits of field feeding. The final year of this winter feeding trial is set to begin in the fall of 2007.

# Upcoming Events

## Canadian Western Agribition

November 19-24, 2007  
Regina, SK  
306.565.0565  
info@agribition.com

## Manitoba Grazing School

December 4-5, 2007  
Keystone Centre  
Brandon, MB  
Manitoba Forage Council  
204.482.6315  
www.mbforagecouncil.mb.ca

## Capturing Feed Grain & Forage Opportunities Conference 2007

“Farming for Feed, Forage and Fuel”  
December 11-12, 2007  
Capri Centre - Red Deer, AB  
Agricultural Research & Extension Council of Alberta (ARECA) 780.416.6046

## Saskatchewan Beef & Forage Symposium 2008

February 6-7, 2008  
Saskatoon Inn - Saskatoon, SK  
Murray Feist,  
Saskatchewan Agriculture and Food - 306.694.3492  
John McKinnon,  
University of Saskatchewan - 306.966.4137

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