



The Blade

Creating an Awareness of Forages

Monthly
Newsletter
of the
**Grey Wooded
Forage Association**



Box 1448, 5039-45 Street, Rocky Mtn. House, AB. T4T 1B1
Phone: 403-844-2645 | www.greywoodedforageassociation.com
Email: Ginette - GWFA3@telus.net | Devin - GWFA5@telus.net

January 19, 2017

HIGHLIGHTS

Page 4 — Joining the GWFA Board

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Photo Credit: Brendon Anderson

GWFA Mission Statement

To promote environmentally and economically sustainable forage and agricultural practices.

GWFA Vision Statement

The community is engaged in regenerative agricultural production methods.



Message from the Chair

By Ken Ziegler

Wow! Here we are in the middle of January and the winter seems to be flying by! My imagination tells me that the days are getting longer, too. I sure hope so.

Welcome to this issue of the Blade. As usual, Ginette and Devin have put together a useful piece of work with articles and announcements that we think will be beneficial to you. Take special note of the events that are being highlighted and join us in these times of both education and visiting.

As you know, getting out with like minded people is uplifting to the spirit which can get pretty heavy during these slower winter days. TV and Facebook do not offer the same level of friendship as actual people.

Of special note to those of you that are feeding high moisture haylage, firstly be thankful that it's good quality feed that, had you tried to hay it would have turned out to be black dark snot.



But secondly, especially when it's really cold outside and the outsides are frozen, be extra careful when removing the net wrap, that you get as much of it off as you can. There's a tendency that plastic strands will stay within the frozen layer of feed that the cows will then consume along with the feed.

Net wrap does not digest. Especially if the strands are longer, they will ball up in the rumen over time and not pass through the gut. In subtle cases, the cow lives her life with less rumen capacity and cannot consume as much grocery as she should. In worse cases, she can actually die from blockage.

Apparently a ranch in Saskatchewan was not removing the net wrap at all and was shredding it off with the bale shredder and allowing the cows to eat the wrap along with the feed. Come spring the fellow lost several cows and when the vet did a post mortem, found sizeable wads of net wrap in the gut.

Not good. Be aware.

Ken

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Manager's Notes

By Ginette Boucher

Greetings,

The holidays came and went, we are now in the second week of January and the harsh weather has finally subsided for the time being. Calving season is fast approaching and for some of you has already started. We have some quality articles in this publication I'm sure you'll enjoy. If you are looking for some specific content for the coming months please give us a call or an email and we will gladly provide this information to you, we are here to serve.

We have updated our logo to improve clarity and freshen it up. We have included in this publication a board member description to assist us in the search of new board members. With our year end fast approaching we are looking to replace three board members. If you would like to make a difference, have some ideas, or simply some time to contribute to your local forage association, we urge you to consider a board position.

We've been working at finalizing our 5-year strategic plan; it should be near completion after the next board meeting. It will be available at our Annual General Meeting for our members to view. Thanks to our board of directors for their ongoing contribution and dedication. We are in the planning stages of our AGM and would be happy to hear from you.

We plan to reviewing our membership fees and our member benefits, to better support our current and future members. We will be looking at the value of the membership and the services and discuss how we can improve them. This is your opportunity to contact us and have a discussion so we continually improve the service provided to you.

We are hosting an Environmental Farm Plan webbook workshop on February 22nd with Clearwater County Landcare. If you are considering doing an EFP or have already started one and are looking for some additional help to get it completed, we invite you to register. Due to the complexity of delivering an EFP workshop, seating is limited to 8 farm families. We encourage you to register as soon as possible to secure your spot. You'll find the poster in this publication.



We are partnering with Red Deer Counties' ALUS program and are delivering a winter watering systems tour. In this publication is our poster along with an article from Ken Lewis of Red Deer County. If you have interest in learning about various watering systems be sure to register for this tour.

I attended the first day of a two-day Farm Transition workshop held at Lacombe Memorial Centre. Alberta Agriculture & Forestry were the hosts and invited GWFA to partner and attend. The content and delivery came from the University of Alberta. The course is called Passing the Torch 12 steps of succession planning. In this first day, we learned the framework (ownership, family, and business). Communication is key for a successful succession plan.

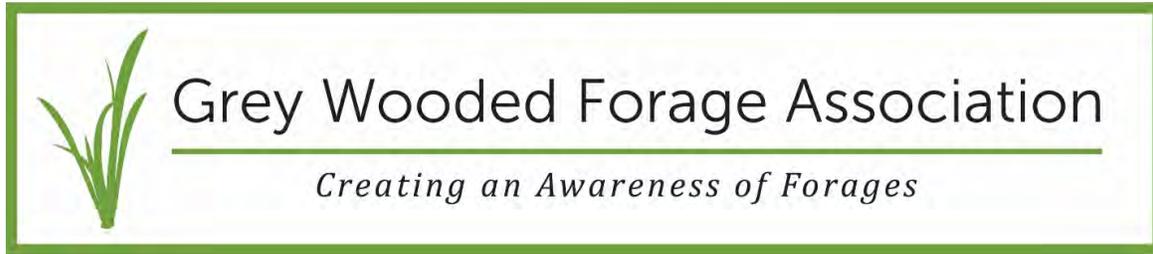
We learned that defining the family core values has an integral part in the plan. The family should have a mission and a vision statement and a code of conduct which sets ground rules for behavior. A full day of valuable information was shared. Part 2 of this workshop will consist of transactional issues such as tax and legal considerations, succession financing and purchase mechanics.

GWFA has the complete manual in the office and it will be available to loan out to members after February 8th. This information is valuable to any individual who has assets and needs to develop a succession plan. A workshop well worth attending. Thank you, Alberta Agriculture & Forestry for putting this on!

Best regards,

Ginette





Grey Wooded Forage Association Mission Statement

To promote environmental & economically sustainable forage and agricultural practices”

Grey Wooded Forage Association Vision Statement

“The community is engaged in regenerative agricultural production methods”

Interested in joining the GWFA Board of Directors?

★ *These are some of the things you can expect as a GWFA Board Member*

- Social interactions and networking with Industry representatives, GWFA members, staff and other board members at our events and meetings.
- Reach out to the membership to advertise events, get project ideas, receive feedback, and engage membership. Also, increase the awareness of GWFA by bringing in new members or partner organizations. Represent your community.
- Get valuable experiences and information. This is a great opportunity to expand your resume, but also tap into resources and information you may not otherwise have access to.
- Make a difference within the organization by contributing at board meetings, committee meetings and with ARECA. This will also give you greater exposure to other facets of the agricultural industry.
- Opportunity to improve yourself professionally by enhancing your leadership skills and industry knowledge. Also, take in learning opportunities at our events and meeting but also educational experiences from outside sources.
- Be involved with different committees and develop unique events and projects by sharing your knowledge and experiences to provide leading edge information to our membership.
- Most of the events hosted by GWFA will be free to board members. Participation and attendance are very important.
- Be involved in the governance and strategic direction of GWFA. Ask questions and challenge the direction of the organization by improving bylaws and policies. Also, provide clear strategy and direction to the Manager and Staff.
- Be an active participant in the three hour monthly board meetings. Offer ideas, experiences and knowledge to shape our organization, but also protect our organizational financial standing, membership investment and capital assets.

Is Bedding Enough?

By Devin Knopp, P.Ag.

I was recently asked the question: Is bedding enough for my cows during the winter cold? A simple answer, yes; but there is more to that answer.

It is our responsibility as producers to provide food, water, and shelter to our livestock. How a producer does that is up to them as long as animal welfare and health are not compromised.

Physiologically, cattle are the epitome of a living furnace. The rumen, under normal circumstances, produces more than enough heat to maintain a cow's body temperature. Like any furnace, it needs an energy source.

During real cold spells adding more highly digestible nutrients to a ration will allow that cow to produce more heat from digestion processes, but also absorb more energy to help maintain body function and thus maintain body temperature. However, the gut of the cow cannot do that alone. There are other physiological characteristics at play. The hair coat is also very important.

The long hairs on a cow act like a winter rain coat, helping to keep moisture away from the body, while the undercoat of thick short hairs acts like a cardigan sweater. These different layers help keep warm air trapped next to the skin and the moisture and cold air away from the body. Cows may look covered in snow, but if their hair coat is healthy, their skin below will be dry and warm.

Along with proper nutrition, managing parasites is very important going into winter. Parasites can affect both the outercoat and undercoat leaving cows more exposed to the cold. This means that despite our efforts to provide shelter animals may not be able to maintain body heat. Ensuring you have a herd health program in place is very important.

Even if we maintain good feed and body condition, some form of shelter still should be provided to cattle. Indoor shelter in the form of barns isn't necessary for normal activities, but access to wind breaks is very important.

Natural or artificial windbreaks act in the same way. Wind chill factor is a challenge all living animals must find shelter to combat.

Trees are a great source for a windbreak as their random positioning, branches and height prevent the wind from penetrating at high velocities. Artificial windbreaks act in the same manner. However, it is very important to position

artificial windbreaks properly so that swirling snow and debris are not pushed into the bedding area forcing cattle back out into the wind or covering their feed and bedding under layers of packed snow.

Bedding for cattle is important for winter welfare and health. Clean bedding helps keep cattle dry and adds additional insulation from cold temperatures, ice and dirty snow.

Having a bedding area allows cattle to loaf and chew their cud in a comfortable environment. This in turn makes the cattle more productive by helping keep active rumen function, which helps produce heat, which in turn keeps them consuming feed.

Combined with a shelter or windbreak the cattle will be comfortable weathering out cold temperatures and windy days. There are lots of different types of bedding, and it all depends on availability and space as to which one a producer may use.

Straw, wood shavings/saw dust, and clean fluffy snow are a few examples. Straw has the best insulating factor, but reduced moisture absorbency.

Wood shaving and saw dust absorb more moisture than straw but don't insulate as well. Something to consider with shavings or sawdust, because of its ability to hold extra moisture, there is a risk of disease contamination and spread if not managed properly.

Fluffy, unpacked snow can also be used as bedding. I would only use it as a last resort, as freeze thaw and wind can turn the bedding ground into icy hard packed snow very quickly making it unsuitable for bedding. Having suitable bedding and shelter can increase productivity of your cattle as they expel less energy staying warm and more energy into production.

To answer the original question; a combination of good feed, clean water, adequate bedding and wind breaks are all very important for proper animal welfare during the cold months.

Listen and watch your cattle, they'll tell you what they need.





Agricultural Research and Extension Council of Alberta

15th Newsletter to Board Members of ARECA Associations

January 2017

ARECA leads efforts toward a National EFP

Upon arrival at ARECA in 2015, EFP Director Paul Watson began reaching out to his provincial counterparts to evaluate the possibility of the provinces working together to harmonize key environmental components of the EFP. In late spring of 2016, the Alberta Wheat Commission showed their support for this initiative.

The initial talks in 2015 were intended for provincial delivery organizations; then industry such as McCain’s, Dairy Farmers of Canada, and Pulse Canada joined the conversation. Demand for a baseline national EFP was clear and ARECA pursued this with the support of the Government of Alberta. We worked steadily behind the scenes developing consensus, bringing stakeholders together, and drafting a terms of reference for a NEFP. The outcome? A National EFP (NEFP) Summit in November of 2016.

There were many farmers at the Summit and their recognition and trust of EFP was evident. EFP was originally built by producers for producers; and farmers at the Summit supported the evolution of the program that has provided access to extension and financial resources in the past.

The NEFP Summit not only served to showcase the many unique features of Canada’s EFP, but provided an effective forum to gauge cross-commodity, full-value chain support for the move toward a national program. Positive remarks relayed the federal government’s commitment to provide continued support for Canada’s EFP as it harmonizes nationally. In the future, this will enable farmers and ranchers to better meet sustainable sourcing requirements here in Canada, and around the world. The item that received almost unanimous support was the creation of a national program that could address national standards with flexibility to address regional differences and accommodate both farmers and industry.



ARECA is currently developing a business plan for delivering Alberta’s EFP 2018-2021.



Banking on Grass at Ziola Farm

By Kevin Ziola

Ziola farm has been marketing farm-raised beef for five years now and it has been our commitment to keep growing our meat program by marketing quarters, halves and wholes. At the onset of our business we made a deal with ourselves to start slow, but make sure our business grows every year.

Recently it was a challenge with the recession. We sell the majority of our meat to city people and as the season progressed we made our way through our contact list trying to market our beef. Unfortunately, a lot of people would say we would love to buy but we are not working. We had to work extra hard, and reach out to new sources to grow our business this year, and we did.

I am on the Ag Services Board for Red Deer county and one of the major topics we are discussing: is how to reconnect farmers with urban people. Seems like there is a large gap between the two groups that is only getting larger.

That gap is something we have recognized on our farm. So, when we sell our meat we go pick it all up from the meat packer and our customers have the option of meeting with us in Red Deer or on the farm. This gives people a chance to meet us and understand who raised the animal and also talk about our farm. That opportunity to engage with our customers seems to open their eyes about farming and agriculture, growing trust.

We had one of our customers email us and ask if we raise grass fed beef how and do we feed them in the winter?

This was my response to his question and based upon the discussion really appreciated it and I believe we gained more trust in what we do!

"Hello, we graze the cows for 300 days a year. On different types of grasses and legumes at different times of year. In the middle of winter, we have the cows on a brassica, turnip, and hairy vetch swath graze.

It works excellent to put weight on through winter. We bank the appropriate kinds of grasses from the fall and get the cows on those grasses beginning of April instead of having to wait for green pastures at the end of May. Also by leaving the standing grass over winter it is a great snow

catch to give a good moisture start in the spring. The thick old grass in the spring creates and traps heat under it so new young grass shoots start growing earlier so the cows get a nice mix of young powerful and older courser grasses.

For the 60 days that we feed them through mid February to mid April, we are calving. The feed is high quality hay which is just dried grass. Dried hay is like putting fruit in a food dehydrator and eating it at anytime. The cows are supposed to work for us, we don't work for them!"

I am also on the Alternative Land Use Services Partnership Advisory Committee. ALUS encourages us (and pays us!) to look after riparian areas and coexist with wildlife.

We have a creek that goes across our land. We put a fence on both sides of the creek to keep the cattle out, to help keep the water clean.

Also, we got three year-round watering systems that draw water from dugouts.

How the waterers work: there's a 1" hose that runs horizontally from the dugout, about 10' down, for about 100' to a vertical culvert in the ground (a wet well). There is a drinking tub on top of the culvert with a pump in the culvert, below frost line. When the cows walk up for a drink, there is a motion-sensor eye that triggers the pump and water comes into the bowl.

When the last cow leaves any water left in the tub drains back into the culvert so it doesn't freeze. The pump is run by batteries that are charged by solar panels.

ALUS paid for about three-quarters of the expenses we had for these fencing and watering project and helped us do our share for the environment, and in the process our farm has become way more efficient, too.



WINTER WATERING FIELD DAY

FRIDAY, FEBRUARY 24, 2017



HOSTS:

GREY WOODED FORAGE ASSOCIATION &
RED DEER COUNTY'S ALUS PROGRAM

SCHEDULE:

MEET AT RED DEER COUNTY CENTRE -
COUNCIL CHAMBERS

9:00 AM - COFFEE & REGISTRATION
9:30 AM - WELCOME
9:45 AM - DEPART (BY CAR POOL CONVOY)
10:00 AM TO 2:30 PM - WINTER WATERING
TOUR (4 SITES)

COST:

\$20.00 (PAYABLE AT THE DOOR)
FREE FOR GWFA MEMBERS & ALUS PARTICIPANTS.
INCLUDES MORNING COFFEE & SNACKS, & LUNCH.

PRE-REGISTRATION REQUIRED:

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Grey Wooded Forage Association

Creating an Awareness of Forages



Winter Watering Livestock and ALUS

By Ken Lewis, Red Deer County Conservation Co-ordinator and ALUS program Co-ordinator



ALUS (Alternative Land Use Services) pays farmers and ranchers for new management that produces an increase in ecosystem services from parts of their land.

Ecosystem services are things from the environment, that benefit people. They include things like cleaner water, cleaner air, pollinator habitat, groundwater recharge, carbon sequestration and much more.

These payments come in two forms: 1) cost-sharing (up to 75% of costs) on adopting new management practices, and 2) annual payments for ongoing management (up to \$50 per acre).

In many situations, when you adopt new winter watering practices for your livestock, that can help you increase ecosystem services production from your land.

This seems to be most often in connection with other livestock wintering practices that you are adopting (such as feeding and bedding).

Different winter watering systems can increase ecosystem services from your land in many different ways. In fact, it's pretty much site specific.

Here's just a few general things that might happen with changes in winter watering:

- 1) The risk of excess nutrients getting into natural water bodies could decrease.
- 2) Native forests and riparian areas around water bodies could see increased ecological health and productivity
- 3) Nutrients can be applied by livestock themselves, over large areas, where you want them to go, improving the overall health and productivity of wide areas of land.



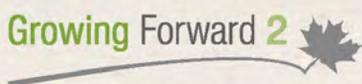
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WHEN

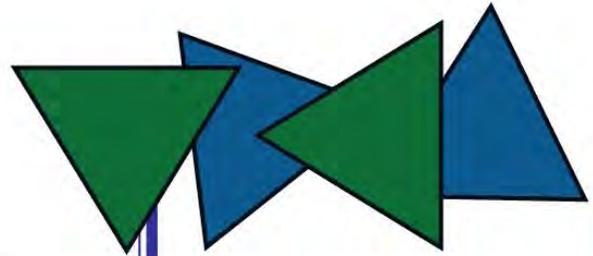
Wednesday, February 22, 2017
10am - 2pm

WHERE

Rocky Learning Centre

4934 - 50 Street
2nd Floor, Old Provincial Building
Rocky Mountain House

Rocky Learning Center is located on Main Street in Rocky
Mountain House at the intersection of 50th Ave and 50th
Street. Second floor of the Old Provincial Building.



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It's Calving Time—Are You Ready?

By Karen Schiml, Ruminant Nutrition Consultant
Blue Rock Animal Nutrition Ltd., Innisfail

Calving time can be one of the most stressful yet rewarding times of the year. Long days and late nights are rewarded with new life and the fresh start of a new calf crop. To help get your calving season off to a good start, start planning a year in advance so you're not caught off guard.

This year's calf crop starts with breeding the previous year, so start off with a sound breeding plan by choosing cows that meet your goals and are suitable to your environment. A cow that fits your program will be able to maintain condition through calving and be ready to rebreed approximately 82 days post partum, maintaining a 365-day calving interval. Select easy calving bulls with low to moderate birth weights to reduce the incidence of dystocia at calving. Get to know your bull suppliers, view their cow herds and familiarize yourself with selection tools such as EPD's to help choose the bull that best fits your need.

A good herd health program includes semen testing your bulls prior to turnout and should include a vaccination program as well. Pre-breeding vaccinations will help protect against diseases such as IBR, BVD and other bacterial and viral diseases. If scours tend to be a struggle in your herd, you may want to consider a scour vaccine as well. Talk to your veterinarian to for help to design a program that works for your herd.

A clean, dry, sheltered area for cows to calve is important to reduce chilling the calf, as well as reduce the bacterial load the new calf is exposed to. A good straw pack will help to insulate a calf against the frozen ground, and a windbreak will decrease wind velocity 15 to 25 per cent. Portable windbreaks are a great idea as you can move them to create a new bedding pack on fresh ground to further reduce the bacteria buildup. Before you need to use calving pens, it's a good idea to take a quick walk around to ensure your pens are in good repair and that any chutes or restraints are in good working order.

At this time, it's also a good idea to take stock of your calving equipment. Does your calf puller need to be replaced, are calving chains and handles free of rust and properly disinfected? These items are relatively inexpensive, so now is the time to replace them. Have them in a handy spot next to where you plan on using them so you aren't in a mad rush to find them when they're needed. A lariat and a rope halter often come in handy as well.

Put together a calving kit that includes items such as disposable gloves and sleeves, a bucket for warm water, clean towels, disinfectant soap and a good obstetrical lube. Talk to your veterinarian for their recommendations, tips and tricks.

Ensure the newborn calf receives colostrum within the first few hours. New research suggests the ideal timeframe is



within 6 hours to achieve the maximum absorption of immunoglobulins. Calves are born with no immunity and a very low vitamin status, therefore rely on the immunoglobulins and vitamins passed through the colostrum to help ward off disease. If the calf is unable to receive colostrum from its dam at birth, the next best option is frozen colostrum from your own cows.

If this is not available, there are good powdered colostrum replacements available from your vet or farm supply store. Just make sure you get a colostrum replacement not a milk replacer.

Good nutrition is important throughout gestation, and ideally cows should be going into calving season at a body condition score of 2.5 with heifers at a body condition of 3.

Cattle with a body condition score of less than 2 will not have the resources to produce top quality colostrum and will have trouble rebreeding. Cows that are too fat will often have a higher incidence of dystocia, with the additional fat reducing the size of the birth canal and suppressing milk production. Ensure that your cows are receiving a balance of protein and energy, as well as vitamins and minerals in the proper quantities and ratios. The best way to do this is to have your feed tested and work with a nutritionist to balance your feeding program.

A balanced mineral program is important throughout gestation. A lot of attention has been focused on proper nutrient balance in the third trimester to ensure a high quality colostrum, however as more research becomes available we are learning the importance of proper nutrient balance, including trace minerals through the first and second trimester as well.

New research into fetal programming suggests proper trace mineral supplementation in the first and second trimester provide critical nutrients when the fetus is developing metabolic pathways. These pathways are related to all bodily functions including nutrient utilization, which research has shown lead to heavier weaning weights as well as increased longevity in heifers kept as replacements.



Will Cows Eat Snow?

*Aa Research Report from the University of Alberta,
By co-authors B. A. Young, A. A. Degen and J. A. Francis*

It is difficult at times to maintain an uninterrupted supply of frost-free water to beef cows during winter. Most producers consider a disruption of the water supply to be a major problem. Others show little concern. In fact, some producers have chosen not to provide water to their wintering cattle and rely on consumption of snow for the animals to obtain their water needs.

A technique using isotopes was developed to measure consumption of water and/or snow by cattle wintering outside in free-ranging conditions and the present report contains measure of water and snow consumption by pregnant beef cows during the 1978-79 winter. The study was undertaken to answer the questions: If access to water is not provided, will beef cows consume snow to obtain their water needs and, if they do consume snow, how much water equivalent is consumed relative to similar cows given once-daily access to frost-free water? Preliminary observations were also made to determine the time required for cattle to start consuming snow after denial of water. It is not the intention of the authors to advocate or support the practice of relying on snow as a source of water for cattle, but to gain information and measurement of the possible beneficial or detrimental effects which could then be used to develop arguments for or against the practice.

Experimental

Preliminary observations: Two mature steers (approximate live weight 800 kg) were offered a maintenance ration of brome grass hay and had free access to a frost-free water bowl. For the preliminary tests, they were confined in a covered pen, access to water was denied, and weighed snow was offered in large containers. The steers were observed frequently and behaviour and snow consumption noted. The steers showed behavioural disturbances during the first two days after access to water was denied. There was frequent bellowing and searching for water. Approximately 35 hours after denial of water the steers started eating snow from the containers. Both steers started consuming snow within a half hour of each other. During the next few days the steers readily and rapidly consumed snow and their distress behavioural patterns subsided. After approximately one week of relying on snow the snow containers were removed and the steers were given access to water. Three days later access was again denied and the snow containers placed in the pen. On this occasion the

steers showed no abnormal behaviour and quickly consumed snow. The cycle of access to water or snow was repeated on several more occasions and the steers quickly changed from snow to water and vice versa.

Snow consumption by pregnant beef cows

Eight beef cows aged three to five years were used. The cows were between their fifth and ninth month of pregnancy during the measurement period and were fed, under cover in a set of eight individual stalls, a ration of 4.5 kg of brome grass hay and 4.5 kg of alfalfa pellets. The ration was offered daily between 08:30 and 10:00hrs. All the cows were accustomed to eating snow prior to the test period by placing them in a field without a water supply for seven days. The cows showed behavioural activities similar to those observed in the steers for approximately two days and then were observed to be licking and consuming snow. Later in the winter when the cows were switched from snow to water and vice versa they readily accepted the change.

The experiment was a Latin Square design with four treatments and two cows on each treatment during each of four 15-day periods. The treatments were:

1. Penned-water: Cows kept in a covered snow-free area and allowed access to a weighed water supply for 15 minutes immediately after the daily feeding period.
2. Penned-snow: Cows kept individually in covered pens and allowed access to a large container of weighed snow except during the daily feeding period. In addition to the isotopic method, daily consumption of snow was determined by weight differences in the containers after adjustments were made for volatilization.
3. Field-water: Cows kept in a snow-covered field but given access to a weighed water supply for 15 minutes immediately after the daily feeding period.
4. Field-snow: Cows kept in a snow-covered field during the daily feeding period.

Isotopically labelled water was administered to each cow and the rate of disappearance of the isotope from the total water pool was used to determine body water turnover. The daily water intake (equivalent to daily body water turnover) by each animal was partitioned into (1) free drinking water, (2) water from snow, and (3) water from food (preformed or metabolic). Estimates of water from food were derived from measurements of total water turnover minus measured water or snow intake of the cows kept in the covered pens.

Results and discussion

Except as noted above the cows showed no behavioural disturbances or apparent discomfort. All cows remained healthy, had normal rectal temperatures and calved normally in the spring. Average weekly air temperatures ranged between -8C and -24C except during the last two weeks when the average daily temperature rose to -4C and 0C respectively. During the last week of the trial, air temperatures

(continued on Page 13)

Table 1. Water and snow intake by beef cows.

	Treatment			
	Penned-water	Penned-snow	Field-water	Field-snow
Av. liveweight (kg)	429	429	425	423
Feed intake				
Alfalfa pellets (kg)	4.50	4.50	4.50	4.50
Grass hay (kg)	4.13	4.12	4.18	4.18
Body water turnover (l/d)	26.5	23.2	29.2	26.7
Water from feed (l/d)	2.9	3.0	3.1	3.1
Free water intake (l/d)	23.6	*	19.4	*
Snow intake				
(water equivalent (l/d))	*	20.2	6.7	23.6

* Access denied.

Will Cows Eat Snow? (continued)

rose above freezing during the day time. The snow cover in the field was between 20 cm and 40 cm except during the last few days of the trial when there was rapid disappearance of snow and bare areas appeared in the field.

Average live weights, intake of pellets and hay, water turnover and intake of free water and snow are shown in Table 1. All the feed offered was consumed except by two cows which, irrespective of treatments, did not consume all the hay offered. Over all treatments, the cows showed slight increases in live weight with the cows, while penned, gaining more weight than when in the field. The average weight gain by cows when relying on snow was the same as when they received water. Most of the weight gain was presumably associated with development of the fetus and uterine growth.

Water turnover was greatest (29.2 litres per day) in the 'field-water' cows and least (23.2 litres per day) in the 'penned-snow' cows and the 'field-snow' cows had similar water turnovers, 26.5 and 26.7 litres per day, respectively. It is of interest to note that the field cows which were given access to water after each feeding period also consumed 6.7 litres (water equivalent) of snow per day. Since one field was used for the four field cows there may have been a tendency for the 'field-water' cows to consume snow along with the 'field-snow' cows by association. The cows were observed to consume snow through the day and it was also noted that when in the pen they consumed little during the night. The cows appeared to prefer snow in a powder form, sweeping it up with their tongues in a circular motion. Lumps of hard icy snow tended to be avoided.

Of importance is the energy cost of melting snow to water in the animal and raising the temperature of the water to body temperature. Daily consumption of 20 to 24 kg of snow initially at -10C (an average value for the present experiment) would theoretically cost a cow between 615 and 740 kJ of energy or 15 to 20 per cent of their daily food intake, if extra heat had to be produced just to melt and warm the snow. However, feed intakes and live weight gains while consuming water or snow were similar.

The present study showed that after and adaption period cows will consume snow in amounts equivalent to that for once-a-day access to water. The studies on snow consumption by cattle will continue to further evaluate the potential costs to cattle and the precautions that should be exercised if this management practice is adopted.

Acknowledgement

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(Reprinted from the University of Alberta 58th-Annual *Feeders Day Report*, 1979)



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Technical Information for the Canadian Forage Beef Industry

Adjusting Cows to Cold Weather

By Karin Lindquist, Forage Beef Specialist, Ag-Info Centre

Cold weather can take a toll on cattle, so it's important to provide them with what they need to get them through the winter.

It all starts with the feed ration. Rations developed for cows during mild or warm conditions will be unsuitable when those animals experience cold weather or cold stress; weight loss and reduced performance can result. Animals undergoing cold stress require more energy and feed to maintain body condition and body temperature, as well as performance in terms of growth, gestation, and lactation.

The low critical threshold temperature for most beef cattle in Alberta is at -20°C , assuming calm conditions and that animals have a dry winter coat. Progressively windier conditions push this threshold higher; for example, with a 20 km per hour wind, a cow's lower critical temperature threshold would be more around -6°C . Also, fatter cattle have a lower critical threshold temperature than thin cattle.

Energy requirements during cold weather are determined by hair coat condition, and body condition. For example, a cow in moderate condition with a clean, dry winter hair coat will have lower energy requirements during a cold winter storm than if her coat were wet and matted or covered in mud. If this cow were in poorer condition (BCS 2.5 or lower), energy requirements would be higher still, no matter what condition her coat would be in.

It is important that cows have access to higher-quality feed (not straw, as this has a low protein content), or have access to additional feed during cold conditions. Otherwise, if lower quality feed does not allow them to eat enough to meet their energy requirements, body reserves will be used up to produce metabolic heat. Cows lose weight as both feed energy and stored fat are diverted into maintaining core body temperature and vital functions. Cows get into a down-ward spiral; the more weight they lose, the less insulation they have, and the more susceptible to cold they get, then the faster they lose weight.

Even though cows can also generate energy with rumen activity with digesting roughages like hay or straw, there still is energy lost with this process that needs to be reclaimed in the diet. Often hay and straw does not have enough digestible energy to compensate for this loss, thus



grains like barley need to be fed so that cows can maintain their energy requirements.

A general rule of thumb to use is for every 10-degree drop below -20°C at noon, a beef cow will need an additional 3 to 4 Mcals of digestible energy. In other words, because barley contains about 1.5 Mcals of DE per pound, adding 2 pounds of barley to the ration for every 10-degree drop will be sufficient to meet her requirements. Cows will also need additional energy when wind speed increases to more than 5 to 10 km per hour. Grain rations over 10 pounds a day should be split into two different feedings—morning and evening—otherwise rumen-upset may be experienced if cattle are eating over 5 to 6 pounds of grain at one time. Cattle that are being first introduced onto grain will need to be introduced slowly over a period of 5 to 10 days.

For a cow in normal body condition (BCS 3) with a dry, clean winter coat, dry matter intake levels can increase from 5 to 30% or more. This is because a cow's metabolic rate has increased in response to colder conditions. In increased metabolic rate increases a cow's appetite, which in turn increases rate of passage of feed. This is an adaptive response to colder conditions; cows can increase internal heat production via rumen activity or fermentation, which decreases their risk of cold stress. An increase in a cow's internal heat production reduces her lower critical threshold temperature. However, some cold weather conditions, like severe winter storms with high winds, can suppress intake because cattle are more concerned with trying to stay warm than eating. Cattle can also experience reduced intake and thus cold stress with wet and matted hair coats, or if they're covered in wet snow or mud.

Efficiency of digestion is also reduced with cold weather and cold stress. When cattle eat more, the feed spends less time in the first two stomach chambers (reticulum and rumen) and passes through more quickly. Nutrients are more likely to escape microbial breakdown, making it more available to the cow. Protein can be reduced during cold events because of this, particularly when more protein is available for absorption in the small intestine.

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Adjusting Cows To Cold Weather

(Continued from Page 14)

Some other management strategies to keep in mind to get your cows through the cold weather include:

- Have sufficient shelter available for days when cold winter wind or snowstorms blow through;
- Provide bedding to keep cows clean and dry. Cereal straw is excellent for this, provided there's ample for all and spread so that it's about a foot thick. Depending on the weather you may need to add bedding every two or three days or sooner if snow has fallen on the bedding just spread out.
- Feed later in the day or evening so that cattle have the opportunity to stay warm during the coldest part of the night. Their incremental heat production peaks six to eight hours after eating, or at around 4 to 6 a.m.; This will certainly make the most out of your feed supply.
- Provide adequate and fresh water. Limited water will actually limit feed intake, making it more difficult for cattle to meet their energy requirements. Severely cold water and frozen water troughs can severely limit feed intake.
- Sort off cows that need more attention than others. Thin cows especially will need more attention because they have higher energy requirements than the bigger cattle. It will also eliminate the competition they need between the bigger cows so that you can make the best use of existing feed inventories.

For more information, check out Cold Weather Adjustments for Cows - Frequently Asked Questions on the Alberta Agriculture website, www.agric.gov.ab.ca



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