



The Verdant Element

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LIVESTOCK WINTERING SITES

As the snow is starting to fall, it is time to start thinking about your livestock wintering site. Wintering sites are regulated by the Agricultural Operation Practices Act (AOPA) to be managed to protect surface water. Under AOPA all wintering sites must be at least 30 meters away from a water body.

Wintering sites should be economical, utilizing landscape features such as south facing slopes (for sunlight exposure) and bush to reduce wind. However management of these sites is needed to protect both ground and surface water. As the manure accumulates over the frozen landscape in the bedding, feeding and watering locations the risk of runoff needs to be assessed. Flat ground has the least likelihood of runoff and steep slopes (over 15%) the greatest, however the risk of runoff can also be influenced by a variety of factors. These include the amount of precipitation received over the winter period, the soil type (larger aggregate such as sand is a larger risk for groundwater, and clay creates a greater risk of surface water contamination), the vegetative cover, the chance of flooding in the area, and amount of surface water entering the area and bush (trees shelter more of the area, slowing the snow melt).

Groundwater contamination is possible as nutrients accumulate and seepage occurs, especially in sensitive areas such as wetlands and sloughs. Seepage can also occur through buffer areas that do not have sufficient vegetation to absorb and filter nutrients.

Well sites are another source for groundwater contamination. Improper casing seals, flooded well pits, or improperly abandoned wells create a direct pathway for contaminants to enter your aquifer. Avoiding areas with high water tables is also helpful to prevent groundwater contamination.

Nutrients from manure entering your surface and groundwater are not the only contaminants of concern; disease causing bacteria can create an even larger problem. Fecal coliform bacteria such as *Escherichia coli* (*E-coli*) and microorganisms *Cryptosporidium* and *Giardia*, when consumed in the water, can cause serious health issues in both humans and livestock. These bacteria and parasites can cause gastrointestinal illness, fever, vomiting and diarrhea, and kidney failure. It can be fatal to the elderly, infants or people with compromised immune systems. In livestock *E-coli*, *Cryptosporidium* and *Giardia* can cause animal weight loss, chronic infections and significant losses of calves.



Designing Your Wintering Site

From Cattle Wintering Sites: Managing for Good Stewardship

Agdex#420/580-2

- Select a naturally elevated area for bedding to ensure drainage is controlled in a direction of least risk of water contamination.
- Provide an off-site water supply or dugout.
- Increase the size of the wintering site area. This decreases the livestock stocking density and concentration of manure on the site.
- Increase the distance between major manure sources such as bedding and feeding areas and the watercourse to reduce manure accumulation. Locate one or both of these areas near or at the top of the slope where it will be the most beneficial for crop growth.
- Create a vegetative buffer between the feeding site and the watercourse. The greater the width and height of vegetative cover, the more effective the buffer. The buffer should be harvested as feed to prevent an overload of nutrients in that area. Be aware that this can become a sink and later saturated as a source of contaminants as the system is overloaded and nutrient overflows occur.
- Move the feeding site frequently during the feeding period. This disperses the manure and reduces the amount of contamination leaving the site.
- Consider alternating several sites from winter to winter to minimize nutrient buildup.
- Use a natural wetland or treed buffer strip to make use of runoff nutrient which can later be harvested as a feed crop.
- Divert off-site water around the feeding site. Construct berms or landscape the site to alter its slope and drainage.
- Install a catch basin to contain runoff.
- Select a site that is not subject to erosion.
- Use fencing to control the time of use or to keep cattle out of sensitive areas.
- Remove manure where it has built up over the winter season as this prevents the movement of nutrients as the soil thaws or it is subjected to precipitation. Harrow the area in the spring to disperse manure and straw.

DIAGRAM 1:
RUNOFF FROM A SHALLOW SLOPE



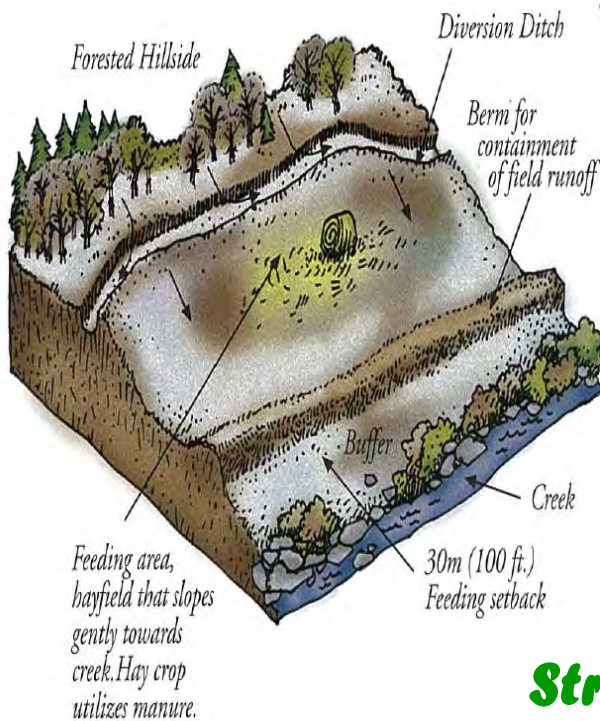
- More cows allowed
- Need elevated area to have well-drained bedding area
- Off stream watering desirable
- Adequate buffer zone between feeding and bedding area and water.

DIAGRAM 2:
RUNOFF FROM A STEEP SLOPE



- More area per cow needed
- Stay back further from water
- Off stream watering is critical





Controlling Runoff

Diverting clean runoff from your wintering site can be accomplished using ditches or dykes. This can also reduce the amount of mud in your feeding and bedding site improving your herd health.

Having a vegetative cover on your wintering site can also affect runoff. It is essential to have a sufficient litter layer or high enough crop stubble to ensure that your livestock's hoof action does not reduce the effectiveness of reducing runoff.

Having an adequate vegetative buffer between your wintering site and watercourse can reduce water pollution. Six meters is recommended, however this would increase with an increase in slope. Vegetative filters such as grassed waterways, shrub/brush or cropland can be used to dilute runoff.

Catch basins to collect runoff can also be utilized to protect surface water quality. However engineering of catch basins can quickly become costly.

Strategies to Manage Density

To prevent nutrient accumulation, reducing your livestock densities can be managed with a few simple strategies. By moving your feed sites using portable feed bunks or rolling out your hay in varying locations will spread out your manure distribution. You can also use portable wind breaks to spread your cattle out. Harrowing or tilling your feeding and bedding areas also distributes your manure, and will improve forage growth and palatability. Spreading out your feed, bedding and watering sites will also help distribute the manure.

Riparian areas are really attractive to cattle as they provide shelter, food and water. However these sensitive areas are easily subject to degradation and surface water quality will quickly diminish. If the riparian area is a groundwater recharge source, your groundwater may also be contaminated. If your winter site includes a riparian area it needs to be managed and livestock should be encouraged to find shelter and bedding elsewhere. This can be done by providing windbreak shelters such as 20% porosity fencing, shelterbelts, open front sheds or moving your feed site or swath grazing. Growing Forward Grazing and Winter Feeding Programs have funding available for projects such as portable wind breaks, shelterbelts and watering systems.

“Where the Sewage Flows”

Poo and You

Does your septic stink? Are you maintaining your system properly? If your system fails, how does it impact you and your families health and the environment? If you have questions and would like more information come to the Septic Workshop on December 6th, 2011. To register please contact Kellie at the LARA office at 780-826-7260 or email sustainag.lara@mcsnet.ca.

Come and learn about the importance of proper installation and maintenance of your septic system. As well as the health and environmental impacts when your system fails.

7:00 pm on December 6th 2011
At the Centennial Center VIP Suite
4313 50th Avenue
Bonnyville, Alberta



Septic Failure can lead to
 groundwater
 contamination

Carbon Credits from Reduced Tillage - Update

Sheilah Nolan, Climate Change Specialist, Alberta Agriculture and Rural Development

Alberta farmers have a unique opportunity to earn cash for agri-environmental improvements from private companies, who've already paid \$61 million to agriculture through the Alberta Offset System. Greenhouse gas emission reductions from farm management improvements, or carbon offsets, can be purchased by other organizations with the end result of fewer greenhouse gases than would otherwise occur. Since 2007, agricultural carbon offsets have been used to meet 20% of reduction requirements by industrial emitters regulated under Alberta's *Specified Gas Emitters Regulation (2007)*. This has removed 5.1 million tonnes of carbon dioxide equivalents (CO₂e) from the atmosphere, which is like taking 1 million cars off the road.

Not all farm practice improvements are eligible for offset credits. In order to qualify, a protocol must establish that there is a sound scientific foundation to link a practice change with greenhouse gases emission reductions, an innovation in farm management that's above and beyond business as usual, and a basis for proving that the practice change actually occurred. The Government of Alberta has approved a number of protocols that specify on-farm management improvements that are eligible for carbon offset credit payments.

The Tillage System Management Protocol encourages biological carbon capture and storage by increasing levels of carbon stored in the soil using conservation tillage management. The protocol gives early and recent adopters of conservation tillage the chance to gain offset benefits through policy that sets 2001 soil carbon storage rates to zero. The newly stored soil carbon is distributed among all adopters using an adjustment based on adoption rates of various tillage systems in different soil regions of Alberta. The approach recognizes that offsets will decline as adoption practices become business as usual and avoids creating disincentives to work up land that's already under conservation tillage in order to qualify.

Protocol Changes after January 1, 2012

The Alberta Offset System is committed to continuous improvement and reviews all protocols at regular intervals. A scheduled five year review of the Tillage Protocol has been completed. The draft Conservation Cropping Protocol posted for public comment includes the following changes.

Baseline Adjustments

Greenhouse gas emission reductions used to calculate credits for No Till management will be 30% lower in the Parkland area and 15% lower in the Dry Prairie area, due to higher adoption of conservation tillage between 2001 and 2006 according to the Census of Agriculture. Reduced Till will be eliminated since adjustments resulted in negative values.

New Summerfallow Reduction Opportunity

Further credits can be gained in the Dry Prairie area by increasing proportions of continuous conservation cropping. The credit is based on replacing the three year average proportion of a farm area under any type of fallow activity with crops seeded under No Till. Lands must be managed for at least eight years (three baseline and five project years) to be eligible. The summerfallow reduction credits are added onto No Till credits.

Increased Requirements for Proof of Practice Change

The Alberta Auditor General has recommended increasing verification standards to a reasonable level of assurance for all future offset projects. This will take effect in the Alberta Offset System on January 1, 2012. This means that positive proof of a practice change will be needed to create offset credits. For tillage management, proof will be required in five areas: ownership, farm size/location, crop type, soil disturbance, and other management (e.g. irrigation, reseeding). There will be no opportunity to generate historical offset credits. Summerfallow reduction credits will also need proof that the average proportion of fallow acres on the enrolled farm enterprise has decreased after switching more area into continuous cropping under No Till.

Current Tillage Protocol for Offset Credits from 2002 to 2011

Alberta farmers can continue to use the current Tillage System Management Protocol to earn credits, but only until December 31, 2011. Historical offset credits may be claimed back to January 1, 2002 if adequate records exist. All credits registered prior to

Carbon Credits Continued

January 1, 2012 can be sold in the future. Aggregation companies help identify necessary records, set up contracts and gather credits into large enough amounts to be attractive to buyers. Aggregators must assemble paperwork and have claims verified by a third party before March 1, 2012. A list of aggregation companies and other contracting information is available online on Alberta Agriculture and Rural Development's Ropin' the Web website, search for carbon contracting.

Other Agricultural Offset Opportunities

There are 11 other government approved offset protocols about agricultural practice improvements that will reduce greenhouse gas emissions, while also improving efficiency and enhancing the value of farm records. "Although offset credits aren't large on a per field or per animal basis, they accumulate over large areas or when stacked with different types of qualifying practices." notes Paul Jungnitsch, Greenhouse Gas Offsets Agrolgist with Alberta Agriculture and Rural Development. "Since there's often overlap between records needed, it makes sense to look at whether extra credits can be created by improving management in a number of areas, such as adding improvements to nitrogen fertilizer management specified in the newly approved Nitrous Oxide Emission Reduction (NERP) protocol to tillage management improvements". Summaries of other protocols that support improved management in areas of energy efficiency, beef, pork and dairy are posted online on Ropin' the Web, search for agricultural carbon offsets. New protocol development is also underway on topics such as land use conversion from annual to perennial crops and improved grazing management.

More information will be available at agricultural meetings and tradeshows through Alberta this winter. For details, contact the Ag-Info Centre at 310-FARM

Environmental Farm Plans

The environment is becoming a more prominent issue. It is a large factor in marketing agriculture and food products in today's markets. Consumers are demanding more transparency and are demanding high quality and safe products. Reputation of food safety is critical to retain and gain access to domestic and international markets.

Environmental Farm Plans (EFP) provide a tool for producers to self analyze their operation and identify environmental risks, current standards, areas for improvement and highlight what they are doing well.

Having a completed EFP allows producers to access different funding opportunities, such as the Growing Forward Stewardship Program. It is also useful in product branding that demonstrates specific environmental standards.

The EFP Process

An EFP can be completed through workshops or one-on-one session(s). The EFP first identifies the soil and farm site characteristics. Following this, the producer completes only the relevant chapters that apply to their operation; such as wintering sites, fertilizer, pesticides, crop management etc. Upon completion the EFP is submitted to a Technical Assistant for review. Once reviewed the EFP will be returned along with a letter of completion.

The EFP is a living document and should be reviewed and updated periodically.

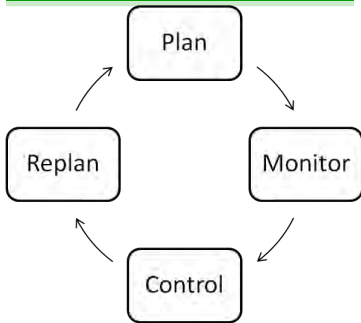
If you wish to complete an EFP or have any questions regarding EFP please contact the LARA office

Reducing agricultural greenhouse gas emissions can create benefits such as increased efficiency, improved farm data management, and increased environmental responsibility



Check out what is new with Growing Forward at <http://www.growingforward.alberta.ca/index.htm>

Plan is a twenty four letter word

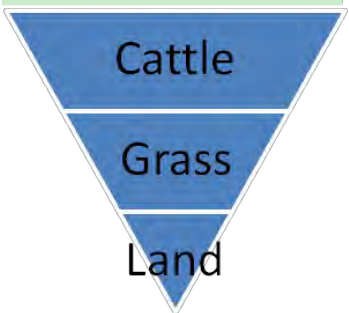


Holistic Management; B-C Ranch Tour

In March Don and Bev Campbell came to facilitate two holistic management sessions in the Lakeland region. Holistic management is a process that considers how to make decisions that are socially, environmentally and financially sound. By beginning with defining your own quality of life, thinking about where you want to be with your relationships, how you feel about yourself, what do you need to feel secure and differentiating quality of life from standard of living. By being able to set goals and make better decisions you can take your land, work with nature to make it more productive, which lowers your costs and results in a higher profit (and hopefully less work).

The definition of insanity is doing the same thing every time and expecting different results. If we have a problem or things are not working we have three choices: do nothing, do the same thing harder, or stop and assess and make a change. On your operation the greatest asset is yourself.

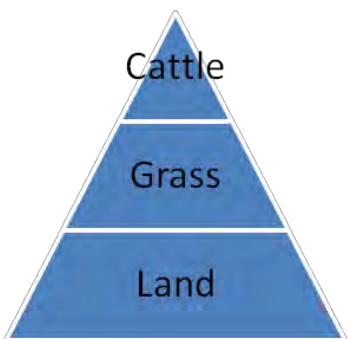
“The wealth is in the land” - Don Campbell



Nature is our ally not our enemy. Working with the energy, water and mineral cycle builds the land and in turn increases the potential for profitability. It is impossible to waste captured solar energy (green growth) as it is an investment in biological capital and can be converted to cash as hay or pasture or animal gain. To increase your solar energy potential plants should be tight spaced, wide leafed with abundant diversity. For effective water management and to minimize loss, increase ground cover with diverse and abundant plants to reduce runoff, increase absorption, and decrease evaporation (more porous soils with increased organic matter). Make use of available nutrients, your animals are the best source of fertilizer. The quicker your manure breaks down the healthier your land is.

In September, 15 producers went to Meadow Lake Saskatchewan to tour the B-C Ranch. The B-C Ranch started in 1948 with approximately 20 cows. Today Don and Bev, along with their two sons and families, run approximately 700 cows and grass their yearlings on 4200 acres divided into 100 pastures. They started utilizing holistic management about 25 years ago.

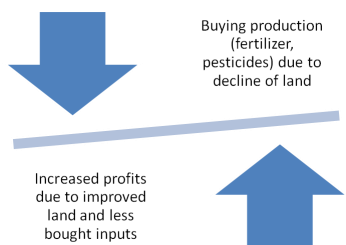
Profit at the expense of wealth



Focus on the land to make it healthy and sustainable. Wealth is increasing = profit.

On average they graze each pasture for three days, with a 80-90 day recovery period. On a drought year they graze more severely to increase the amount of days of recovery. [Overgrazing is staying too long or coming back too soon (not enough recovery) versus severe grazing which is grazing the plants shorter but leaving a longer recovery period.] A good range of recovery is 60 to 90 days. They calve in May and June and wean in November. They provide mineral and salt every few days in bins. They utilize higher stock densities to increase competitiveness and increase cattle grazing uniformity. Each pasture is roughly 27-40 acres with a high diversity and density of species (about 8 legumes species, and a variety of grasses and forbes) which compensates for both good years and bad years. The land is located along the Beaver River, with very sandy soils. They provide water to the pastures using a system of channels, grassed waterways and wetlands.

In the winter they rotationally bale graze separating the herd into first time calvers, second and third calvers, and the rest of the herd to reduce competition. They move the herds every ten days (versus three with summer pastures) as the cows are more settled and tend to clean up better. As well, a ten day move allows for easier adjustment of feeding requirement due to the weather. They estimate feed at 35lbs/cow and 30lbs for smaller/younger animals adding 5lbs for cold weather. They space their bales about 25 feet apart to ensure adequate access for all cattle and to distribute manure and reside better. They only provide water for the calves leaving the cows to eat snow. They supplement starting in November and wean them off starting April 1st and are completely off supplement by May for calving.



The mindset behind bale grazing on their operation is qualifying bale waste as residual that creates a thicker thatch, improving the soil and creates better growing conditions in the future. The thatch retains moisture which is beneficial in a drought year and creates a microbial habitat that is beneficial for soil health and the breakdown of nutrients (manure) for plant utilization.

The Campbell's purchase their hay as it is more cost effective for their operation. Always keep in mind that there is no blanket solution or one size fits all approach to management. You need to consider your own goals and what would work best for you to get where you want to go.



Don Campbell showing the thatch created with bale grazing and improving the land. Moving the cattle every three days allowing for 85-90 day recovery for that pasture. Channel watering system. Adequate trees allow for shade and increased productivity.



Lakeland Agricultural Research Association

LARA
Box 7068
Bonnyville Alberta
T9N 2H4

Phone: 780-826-7260
Fax: 780-826-7099
Kellie Nichiporik
E-mail: sustainag.lara@mcsnet.ca

<http://www.lara.areca.ab.ca>

Sustainable farming encompasses a wide range of practices and principles; combining environmental stewardship with profitability and ensuring that the family farm will be there for generations to come.



B-C Ranch continued



This sandy Jack Pine forest area was cleared and bale grazed, creating a thick thatch and has become productive. Compared to the photo below of the Jack Pine forest.



Thistles are not a problem but a symptom of previous management.

