

Relocation of Confined Livestock Facilities

A Producer's Guide



Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada



PCAB
The Provincial Council of Agriculture Development
and Diversification ADD Boards for Saskatchewan Inc.



Saskatchewan
Ministry of
Agriculture

Selecting and Designing a Winter Feeding Site

Choosing the location of a winter feeding site requires careful consideration. The site must be accessible and provide shelter and adequate space for livestock. Site selection should also ensure impacts on riparian areas and water sources are minimized. Once the size of the feeding area is determined, consideration must be given to the slope of the land, drainage patterns, soil conditions and distance to rangeland, annual cropland and forage fields.

When choosing the location for a new livestock confinement site, preventing manure-contaminated runoff from reaching a water body must be a high priority. Whenever possible, sites should be located where water drains away from surface water bodies and well sites, or where the slope allows establishment of vegetative filter strips and holding ponds. Locating sites on a slope also provides good pen drainage in the spring. Careful design of facilities will also make it easier to handle and feed livestock. Furthermore, maintaining dry pens will improve the overall health and performance of the herd.

Other factors to consider when choosing a wintering site include soil type and depth to water table. Sites should be selected where soils have sufficient clay content and the water table is isolated to protect it from being contaminated by leaching nutrients.

The site should have access to infrastructure such as an all-weather road, electricity and telephone. Water supply development and delivery is required and many options are available to consider. Other geopolitical factors include distance to neighbors, compliance with provincial water use allocations, compliance with federal and provincial acts and local bylaws.

Methods for Maintaining Water Quality

Management options for maintaining water quality include controlling runoff, reducing the length of time that livestock are concentrated in small areas and controlling livestock access to riparian areas.

There are several methods available for controlling manure-contaminated runoff. For example, dikes, ditches and holding ponds can be used to prevent contaminated water from reaching a water source. These structures may require approval under Saskatchewan's *Agricultural Operations Act* to ensure they adequately meet the environmental requirements of a site.

1. Diversion Dikes and Ditches

Saskatchewan Watershed Authority (SWA) has the responsibility for water diversions and drainage. Generally speaking, if the water being diverted or drained can leave the quarter on which the work is being carried out, an approval is required. Contact your local SWA office for details.

Dikes and ditches may be an option in some areas where drainage patterns are favorable. This strategy can be employed in two ways:

- Using dikes to divert clean water around the feeding site to prevent it from passing through areas where it may become contaminated by livestock manure; and
- Ditching contaminated water from the feeding area away from surface water bodies and into holding ponds.

The scale of this strategy depends on the location and size of the livestock operation. Diversion of clean water around the feeding site reduces the volume of water that must be contained in the holding pond. The holding pond should be emptied on a yearly basis.

2. Holding Ponds

In areas where drainage options are not feasible, holding ponds can be used to collect contaminated runoff. Holding ponds must be situated and constructed to ensure that groundwater and surface water are protected. Ponds are sized according to regulations specified in *The Agricultural Operations Act*, and must hold the runoff generated by a three-inch (75 mm) runoff event. Consult with the Agricultural Operations Regional Engineer in your area for assistance on site selection and holding pond design to ensure that surface water and groundwater are protected. A factsheet titled "*Holding Pond Site Selection and Design*" is available from the Saskatchewan Ministry of Agriculture.

3. Seeded Buffer Strips

Seeded buffer strips can be used to protect water quality in many areas. A wide variety of plant species is available for different soil types and environments. Buffer strips usually consist of perennial forage crops, trees and shrubs. However, annual cereal crops can also be used. Like riparian areas, vegetation in a buffer strip reduces soil erosion, filters material from runoff, and increases infiltration of water into the soil. The type and amount of vegetation present, controls these processes to a great extent. For a buffer strip to be effective, some vegetative material must remain on the site at the end of the growing season.

The appropriate width of the strip depends on the slope of the land and the type of vegetation present.

For riparian vegetation to be effective as a filter to trap sediments and nutrients, adequate plant vigor and species composition must be maintained. This can be accomplished by employing such practices as a short-grazing period or rest rotation system (full-season rest every few years), or by excluding grazing if necessary.

4. Manure Management

The wintering site will have a manure pack build-up that needs to be removed. The new facility should have access to crop or forage land where manure can be spread. This area should be large enough to accommodate several years' worth of manure for optimal plant use to prevent a nutrient build-up in soil. The holding pond effluent can be spread like dry manure, injected, or irrigated on cropland.

Reducing Winter-Feeding Period in Confined Facilities

Producers may want to reduce the duration of livestock wintering in a confined facility by incorporating alternate feeding and watering strategies into their management system.

These strategies may include:

- Providing water away from riparian areas,
- Controlling access to water bodies,
- Fencing riparian areas to control livestock access,
- Swath grazing of forages,
- Bale grazing,
- Chaff grazing,
- Dormant-season grazing of perennial forages, also referred to as stockpile grazing, and
- Movable feeders and shelters for rotating feeding sites.

All of these strategies can be used to reduce the amount of time livestock spend in the confined wintering site. Also, by using techniques such as swath grazing, livestock are fed over a larger area, manure is less concentrated and contaminated water is less likely to reach water sources.

Water Development

Saskatchewan Watershed Authority (SWA) has responsibility for water allocations. Generally, larger confined livestock operations will require either a ground or surface water approval for the use of water.

Approval is also required for domestic water uses if it involves an impoundment or the construction of pipelines that extend beyond a quarter of land. Contact your local SWA office for details.

Points to consider when planning your source:

Wells:

- Are there local aquifers in your area?
- Will the production of a well handle your livestock's demands?
- Will the quality of the water be adequate for watering livestock?
- What are the costs involved in developing a well?

Dugouts:

- Is there sufficient runoff in your area to continually fill a dugout?
- Will the soils be adequate to hold water?
- Will the quality of the water be adequate for watering livestock?
- Is the dugout located in an area that prevents contamination from your new facility?

Pipeline from an existing source:

Generally, installing a pipeline from an existing source is more feasible than developing a new source. Be sure to install the proper pipe diameter and pressure rating, as well as pump size to handle your livestock's demands.

Always design for future expansion.

Dead Animal Management Plan

Death loss is a given for all livestock operations. A plan to deal with this production issue should be in place. Carcasses must be managed in a way that prevents access by scavengers and prevents runoff effluent from leaving the site. Composting, rendering, incineration and burial are acceptable methods of disposal.

A disposal site for catastrophic loss should be located near the livestock facility. This site should have suitable geology to contain the entire herd for burial.

Decommissioning Old Sites

Old facility sites should be decommissioned to reduce risks to the environment. The facility should be returned to a condition where minimal confined livestock rearing can take place. The site should have the manure removed, soil leveled to the original grade and have forages seeded. Alternative uses for this site such as machinery storage, summer grazing and haying – or reduced livestock numbers such as confining a few horses or bulls – are all acceptable practices.

Summary

There is a growing need to protect water quality in Saskatchewan. Livestock producers can contribute through careful planning when developing new winter feeding facilities or by making changes to existing facilities. Many strategies are available for reducing disturbance in riparian areas and for minimizing manure accumulation near water sources. These strategies include controlling runoff, seeding buffer strips and controlling livestock access to riparian areas. In many cases, approval under *The Agricultural Operations Act* will be required. Consult with the Agricultural Operations Regional Engineer in your area for technical assistance.

Through careful planning and implementation, many economic and environmental benefits can be achieved, including:

- Improved livestock and manure distribution,
- Reduced concentration of manure in areas prone to runoff,
- Improved or maintained health of riparian areas,
- Improved or maintained water quality,
- Improved herd health and performance, and
- Reduced winter-feeding costs.

References and Suggested Reading

Riparian Area/Rangeland Management

Abouguendia, A. and B. Kowalenko. 1999. *Ranching for Conservation and Profit: Producer Experiences*. Grazing and Pasture Technology Program. Regina, SK. 57 pp.

Adams, B. and L. Fitch. 1995. *Caring for the Green Zone: Riparian Areas and Grazing Management*. Alberta Riparian Habitat Management Society - Cows and Fish. Lethbridge, AB. 41 pp.

Ducks Unlimited Canada. 2007. *Livestock Watering Systems in Saskatchewan: Producers Experiences*.

Huel, D. 1998. *Streambank Stewardship: Your Guide to Caring for Riparian Areas in Saskatchewan*. Saskatchewan Wetland Conservation Corporation. Regina, SK. 48 pp.

Moen, J. 1998. *Managing Your Native Prairie Parcels: Your Guide to Caring for Native Prairie in Saskatchewan*. Saskatchewan Wetland Conservation Corporation. Regina, SK. 48 pp.

Prairie Agricultural Machinery Institute. *The Stockman's Guide to Range Livestock Watering from Surface Water Sources*. Humboldt, SK. 36 pp.

Saskatchewan Agriculture. Farm Facts: *Holding Pond Site Selection and Design*. Regina, SK. 4 pp.

Saskatchewan Watershed Authority. 2003. *Stewardship and Economics of Cattle Wintering Sites*.

Saskatchewan Wetland Conservation Corporation. 1998. *Living on the Waters Edge: Wildlife Along the Stream*. Streambank Stewardship Factsheet series. 2 pp.

Saskatchewan Wetland Conservation Corporation. 1998. *Ranching Along the Stream*. Streambank Stewardship Factsheet series. 2 pp.

Winter Grazing and Feeding

Alberta Agriculture, Food and Rural Development. 1998. *An Introduction to Swath Grazing in Western Canada*. Agdex 420/56-1. Alberta Agriculture, Food and Rural Development. Edmonton, AB. 16 pp.

Alberta Agriculture, Food and Rural Development. *Haynes Creek Watershed Study*. Factsheet. Alberta Agriculture, Food and Rural Development. Edmonton, AB. 4 pp.

Colberg, T. and Z. Abouguendia. 2000. *Winter-feeding Options for Maintaining Health Riparian Areas and Water Quality*. The Grazing and Pasture Technology Program. Regina, SK. 4 pp.

Klein, L. *Winter Grazing and Alternate Feeds for Beef Cattle in Saskatchewan*. The Grazing and Pasture Technology Program. Regina, SK. 12 pp.

Klein, L. 1996. *Winter Swath Grazing*. The Grazing and Pasture Technology Program. Regina, SK. 10 pp.

Klein, L. 2008. *Bale Grazing and Grazing Calculator*. Saskatchewan Ministry of Agriculture.

Lastiwka, G. 1999. *Winter Swath Grazing*. in *Western Forage/Beef Group*. Vol. 3, Issue 3. Lacombe. AB pp 3-4.

McCartney, D. 1996. *Research Summary of Swath Grazing*. Western Forage/Beef Group, Agriculture and Agri-Food Canada, Lacombe, AB. 16 pp.

Acknowledgements

This publication has taken numerous excerpts from “*Winter Feeding Options for Maintaining Healthy Riparian Areas and Water Quality*”, published under the Grazing and Pasture Technology Program, February 2000.

For more information

- Contact a Saskatchewan Ministry of Agriculture Regional Engineer, Regional Forage Specialist or Regional Livestock Specialist at your nearest Regional Office, or visit www.agriculture.gov.sk.ca; or
- Contact the Agri-Environment Services Branch, Agriculture and Agri-Food Canada: Regional Conservationists / Rangeland Specialists / Hydrologists / Water Development Technicians; or
- Contact the Saskatchewan Watershed Authority: Water Resources Offices, Riparian Specialists at 111 Fairford Street East, Moose Jaw, SK S6H 7X9, (306) 694-3900, or visit www.swa.ca/; or
- Contact the Provincial Council of Agriculture Development and Diversification (ADD) Boards: Program Representatives for the Canada-Saskatchewan Farm Stewardship Program at 220-333 25th Street East, Saskatoon, SK S7K 0L4 (306) 955-5477, (toll-free line) 1-866-298-7222, or visit www.saskpcab.com.