AGRI-FACTS
Practical Information for Alberta's Agriculture Industry

October 2004 Agdex 420/56-2

# Swath Grazing in Western Canada: an Introduction

## Contents



## Introduction

Swath grazing is a management practice that can be used to extend the grazing season and to reduce feed, labor and manure handling costs for cattle producers in western Canada. The practice may also eliminate or reduce the costs for corral cleaning, manure spreading and feed handling.

*Swath grazing can reduce feed, labor and manure handling costs for cattle producers in western Canada*

Annual cereals are seeded in mid-May to early June and swathed from late August to mid-September when the crop reaches the soft to late dough stage and before killing frosts. The swaths are left in the field for the cattle to graze during the winter.

Livestock may be able to obtain all or part of their winter feed requirements through swath grazing. Potential environmental benefits such as residue and manure management exist through swath grazing.

For swath grazing to be successful, good management is necessary so that the cattle are healthy and maintain adequate condition score. Feed, fencing, water sources and shelter are all important elements that need to be carefully planned when developing a swath grazing program. This factsheet describes the management practices producers need to consider to ensure that winter swath grazing is done successfully, without sacrificing cattle health and productivity.

Most producers use swath grazing to feed dry, mature beef cows that are in reasonable body condition. Cows should be at a body condition score of 2.5 to 3. Caution is required when swath grazing calves, young cows, thin cows and cows with calves because they need higher levels of energy and management, as well as better quality feed than dry, mature cows. When

Alberta
AGRICULTURE, FOOD AND RURAL DEVELOPMENT

swath grazing, consider providing supplemental feed and shelter to livestock with higher management needs.

For further information on body conditioning scoring, check the website www.foragebeef.ca under the heading "Management."

# Choosing a field for swath grazing

Field characteristics, animal health and the time required to manage the livestock all influence the potential length of the grazing season. For best results, select a field:

- where animal condition can be easily monitored
- where a water system is available if snow is unavailable or unsuitable as a water source
- with protection from the wind; swath grazing animals spend more time and energy eating than those on conventional feeding programs – a natural or portable windbreak is necessary for adverse weather
- where access to windrows is not limited due to severe snow drifting
- where supplemental feed can be provided to the animals should the occasion arise
- where wildlife problems can be controlled

# Annual crop selection

Barley and oats are the most common crops used for swath grazing. Producers and researchers have found that high yielding grain varieties generally produce higher forage yields. Forage quality at the time of swathing can be enhanced by selecting late maturing forage type varieties.

Crops that are in the soft dough stage, green and leafy at the time of cutting, will provide the best forage quality for swath grazing. If using barley for swath grazing, smooth-awned varieties are preferred as rough barley awns may lodge in a cow's mouth causing lump jaw.

For further information on crop selection, check Alberta Agriculture's website at: www.agric.gov.ab.ca. Select "Crops" and click on "Cereals" then on "Varieties" to obtain cereal performance data. The cereal yield information is also available from Alberta Agriculture's Publication Office. Call 1-800-292-5697 toll free to order a copy of the cereal yield factsheet (Agdex 100/32).

Foxtail millet and corn are also potential crops for winter grazing systems; however, both crops require adequate heat units and moisture. Research at the Agriculture and Agri-Food Canada Research Centre in Brandon has indicated that foxtail millet is a crop that is adapted to late spring seedings, but it is slow to establish and should be seeded on clean ground to limit weed competition. Foxtail millet can be swathed and winter grazed in a fashion similar to cereal crops.

Research at Brandon has also shown that corn is slow to establish and requires a herbicide program to limit weed competition. Corn is usually managed as a standing crop for winter grazing programs. Winter grazing research results from the Western Beef Development Center in Saskatoon and Agriculture and Agri-Food Canada in Brandon are available on the website www.foragebeef.ca under the heading "Extended Grazing Season."

### Seeding an annual crop

The objective is to swath the crop in the fall, just before frosts and when the crop has reached the early heading to soft dough stage. Crops can thus be seeded from mid-May to early June. However, research has indicated that forage yields will decline as the seeding date is delayed from mid-May to early June. A crop in the early heading to soft dough stage provides a high quality forage.

For maximum forage yield and stand density, cereals should be seeded at 3 bushels per acre. This seeding level ensures good stand density. Winter cereals such as fall rye or winter triticale can also be added to the seeding mixture.

The main benefit to adding winter cereals is to provide early spring grazing the following year. Under good growing conditions, winter cereals may improve swath quality and provide some additional fall grazing in the seeding year. If the crop is swathed after September 15, there will be virtually no re-growth from the winter cereals that fall.

When mixing winter cereals with spring crops, the winter cereal should be planted according to moisture levels for your area. Winter triticale and winter wheat are less hardy than fall rye and often show signs of winterkill.

### Fertilizer rates

Normal fertilizer rates used for grain crops are adequate for a swath grazing program. Producers need to conduct a soil test to determine the optimum level of nutrients needed. A spring soil test will determine the nutrient carryover in these fields.

### Nitrates

Nitrate accumulation in the forage is often a concern with swath grazing. If normal fertility rates are used, the incidence of nitrate problems is very low. Nitrate accumulation may be a concern in fields with a history of high nitrogen fertilizer or manure applications.

If crops are stressed from drought, long periods of cool cloudy weather or frost, nitrate levels may increase. If the stress is removed and plant growth recovers, nitrate levels will generally decline within a few days In the case of a light or killing frost, it is advisable to swath the crop immediately. This practice will eliminate any potential for nitrate accumulation**.** If nitrates are a concern, provide free-choice hay as a means of diluting the swath grazing ration.

For further information on nitrate management, check the website www.foragebeef.ca under the heading "Health and Nutrition," or obtain a copy of the fact sheet *Nitrate Poisoning and Feeding Nitrate Feeds to Livestock*, Agdex 400/60-1, from Alberta Agriculture, Food and Rural Development at 1-800-292-5697.

### Herbicides

Weeds can be controlled with either a pre-seeding or an in-crop herbicide treatment. By delaying seeding to late May to mid-June, extra time is available to control weeds that emerge before seeding. If broadleaf weed control is required, use a recommended herbicide. It is important to check the herbicide label for grazing and feeding restrictions.

### Swathing

The swath should lie on top of the stubble and be as large as possible. Depending on crop yield, normal swathing widths are 20 to 25 feet, which helps reduce wastage in deep snow. Cereals should be swathed in the soft to mid-dough stage. Foxtail millet should be swathed at the early heading stage to ensure a high quality feed. Swath late enough in the fall so that cool daytime temperatures prevent mold growth on the swaths.

In the event that a damaged mature cereal crop has to be salvaged through swath grazing, great care must be taken to prevent grain overload. Cows will often concentrate on eating the mature grain heads first, so their access to the swaths must be limited at the initial grazing.

One method to achieve this goal is to bale and remove the crop from a small portion of the field. Use this area as the initial grazing area by limiting access to the mature swath using an electric fence. Provide some straw as a supplemental feed during this initial grazing period. Once the cows get acclimatized to the mature swaths, the electric fence can be moved every one to three days. The cows should clean up the entire area before the electric fence is moved.

## Perennial crops

Currently, some producers are experimenting with perennial crop re-growth for swath grazing. However, winterkill could be a problem because swath grazing may leave the perennial crop with insufficient snow cover.

## Testing swath quality

It is important to know the feed quality of the swath to estimate the nutrient levels available and to determine the type and amount of supplemental feed needed.

The accuracy of the feed test depends on the number of samples taken. It is best to take several random samples from across the field. The combined sample must be representative of the crop being grazed. If there are differences in large areas of the field, consider submitting separate samples from those parts of the field.

The sample can be analyzed at any accredited laboratory. The analysis should include fibre content, projected energy levels, protein levels, calcium, phosphorus, potassium, sodium, magnesium and possibly nitrate levels. The results can then be used to balance the swath grazing ration.

## Swath forage quality

A general decline in forage quality can be expected with swath grazing crops during the fall and winter months. The changes in nutritive value are larger between November and April than between September and November. The main shift in nutritive values occurs in digestibility with acid detergent fibre (ADF) and neutral detergent fibre (NDF) values increasing from September to April. As a result, an energy supplement is recommended for nursing cows grazing on swaths during the spring months.

### Swath quality

- Feed test swaths in early October for crude protein, ADF and NDF to determine swath nutrient value. Test swaths again in March if spring grazing is being planned.
- Barley swaths have higher digestibility and protein than oats.
- Mixing forage peas, fall rye or Italian ryegrass with cereals can result in improvements to the nutrient values over cereals seeded alone.
- Seeding from mid-May to mid-June had no effect on swath quality, but later seedings reduce forage yields.

# Grazing management

Swath utilization is a key factor in determining if swath grazing can offer livestock producers an economic advantage. Controlling the amount of swath that is accessible to the cattle is cited by producers as one of the most challenging and important factors to swath grazing. If the cattle are not confined, they will only graze portions of the swaths. This behavior can lead to significant waste during winter grazing.

One way to prevent free access to the entire swath grazing area is to use a portable electric fence. By restricting access, feed utilization is improved. By regulating the quantity of feed being consumed, wastage is reduced by preventing livestock from trampling swaths over a larger area. Forage quality will also be better if swaths can be left undisturbed until they are required for grazing.

*Figure 1. Grazing down swaths*

To reduce feed wastage, grazing down the length or face of the swaths is often preferable to grazing across the full length of a swath (Figure 1). Larger and fewer swaths work well when grazing down the face of the windrows.

Depending on weather and management practices, swath grazing can be equal to or higher in feed efficiency than winter feeding with harvested hay or silage crops. Feeding losses with stored feeds are often in the 5 to 20 per cent range. Harvesting and storage losses of hay and silage can be as high as 30 per cent.

If producers plan on using a field that has low lying areas and other places where snow accumulates, have the cattle graze these areas earlier in the winter. Also, spring grazing can be used to clean up swaths that were not accessible during the winter months. Specific areas or swaths can be left for spring grazing. This practice provides a grazing area first thing in the spring and provides perennial pastures with a longer rest period before spring turnout.

### Supplemental feed

It is essential to monitor the herd closely for body condition and health. Supplemental feed may be necessary during periods of extreme cold and heavy snow falls. Minerals, salt and vitamins should always be available. When spring grazing cow-calf pairs, it will be necessary to provide extra energy in the form of silage, grain or hay to nursing cows.

### Estimating days of available feed

To estimate swath utilization, assume a cow will use 2 to 2.5 per cent of its body weight. Thus, a 1,200 pound cow will consume about 24 dry matter pounds of swath feed per day. This amount does not take feed wastage into account. The length of the swath grazing season is affected by how well the cow cleans up the swath, which is influenced by both how often the fence is moved and by the depth of the snow. The thoroughness of consumption can be difficult to estimate.

Swaths not utilized during the winter swath grazing period can be completely consumed by cows and calves the following spring. Supplemental feed should be supplied to these nursing cows.

# Length of swath grazing season

Here is a summary of the swath grazing experience at the Agriculture Canada Research Centre at Melfort, Saskatchewan, and Lacombe, Alberta (Table 1). Heavy snow conditions at Melfort in all years made it difficult for high swath grazing utilization. At Lacombe in some years, there was virtually no snow until January, and as a result, the cows were able to make excellent use of the swathed crop.

**Table 1. Swath grazing at three locations**

| Oat swath grazing at Melfort Research Farm | Grazing days | Cross-bred cows/acre | Crop yield dry matter lb/acre | Grazing days/acre |
|---|---|---|---|---|
| November 3 to December 21/94 | 48 | 2.6 | 7179 | 125* |
| November 21/95 to January 8/96 | 48 | 2.25 | 6750 | 108* |
| November 21/96 to January 9/97 | 48 | 2.25 | 7624 | 108* |
| **Barley swath grazing at Lacombe Research Centre** | | | | |
| November 19/97 to January 30/98 | 70 | 4.0 | 7044 | 297 |
| December 1/98 to February 17/99 | 79 | 2.1 | 4508 | 167 |
| November 8/99 to March 2/00 | 115 | 2.3 | 6446 | 296 |
| November 15/00 to February 27/01 | 104 | 2.3 | 7660 | 197 |
| December 3 /01 to February 27/02 | 86 | 1.7 | 7659 | 148 |
| November 1/02 to February 20/03 | 111 | 2.7 | 9678 | 301 |
| November 21/03 to February 23/04 | 94 | 2.1 | 8130 | 194 |
| **Oat swath grazing at Lacombe Research Centre** | | | | |
| November 1/02 to February 20/03 | 111 | 2.6 | 7011 | 288 |
| November 21/03 to February 23/04 | 94 | 1.9 | 8130 | 176 |

* Melfort data only refers to winter grazing days. Extra grazing days obtained from spring grazing are not included.

In both locations, cows plus calves were able to clean up all available swathed material the following spring before spring seeding. The nursing cows were supplemented with extra silage or grain to meet the nutritional requirements.

### Grazing through snow

Cows can graze through two feet of soft snow (Figure 2). Wind-swept, severely crusted snow or icy conditions can make grazing difficult or impossible. If the snow becomes too hard or too deep, it may be physically impossible for the herd to access the swath.

*Figure 2. Grazing through snow*

Some ways to help open up the swath in times of heavy snow include driving a tractor down the swath or blading snow off the swath. Placing a portable fence across the swaths also helps by exposing the ends of the swath as the cows will see the continuation of the swath after each fence move.

## Fencing

A temporary electric fence is the easiest and cheapest way to control cattle access to swaths. Once cattle learn to respect an electric fence, they will not challenge it to get at the other swaths. Fences should be placed at right angles to the swaths. It is important to train the herd to respect the electric fence before starting to swath graze.

### Grounding

Proper grounding is critical to making an electric fence work. The high insulating factor of snow and frost often restricts a fence's ability to deliver a shock to the livestock. Several deep ground rods linked together will help ensure proper grounding.

A two-wire fence where one wire is electrified and one is grounded is another method to control the herd. Contact local suppliers or check manuals on fencing for more information, or check the website www.foragebeef.ca for further information on grounding and installing electric fences.

### Energizers

Energizer type and size play a major role in the effectiveness of an electric fence during the winter. A 110 volt energizer is recommended for reliability and low maintenance. Battery-powered energizers can be used, but need to be checked as they often need recharging. A heavy-duty, deep cycle battery should be used. Put the battery in an insulated box, and elevate it off the ground for further protection and longer use.

If using a solar-powered fence, watch for snow cover on the panels and the availability of sunlight. Check frequently to see if there is adequate power, especially when daylight is short. Always keep backup batteries available.

For further information on electric fence energizers, check the website www.foragebeef.ca under the heading "Fencing."

### Polywire

High tensile wire is recommended for the main perimeter fence and poly wire or tape for the moveable fences. Strength and visibility are the reasons for using polywire or polytape. Check for durability, as some polytape and polywire can break down after prolonged exposure to ultraviolet light and cold temperatures.

### Fence posts

Many different materials can be used for fence posts. Rebar and fibreglass posts are often used because of their durability in winter. Be aware that an electrical short will occur if the electrified wire touches the rebar. This problem makes the rest of the fence less effective.

Planning post placement before winter freezeup saves time. Portable fences must be sturdy for use on swath grazing fields. A small cordless drill with a wood extension bit can be used to drill a hole to set the post in frozen ground.

When setting posts, producers may find there is less frost underneath the swaths than between swaths. To remove rebar posts easily, turn the post several times with a small pipe wrench.

The tumble wheel fencing system is another method for moving portable fences. These systems are best suited to narrow fields. It is important to have the tumble wheel units spaced apart equally to prevent sag and animal escape. Although easier and faster to move than posts, tumble wheel systems are more costly to purchase.

## Snow as a water source

Cattle prefer water, but snow can be an adequate water source. Cattle unfamiliar with using snow as a water source will start to consume snow within one to three days. Cattle recover quickly from this adjustment. Cattle prefer clean soft snow; however, snow is not a reliable water source in areas that have been trampled, windblown or where snow has become crusted. In Chinook areas, a lack of snowfall and periodic melting make snow an unpredictable water source. Snow trapping may help meet the herd's water needs in these areas. It is essential that alternative methods of watering cattle are available if snow conditions or lack of snow becomes a problem.

Whether deciding to use snow alone or a combination of snow and fresh water, producers need to monitor their animals closely to determine if their water needs are being met. Fresh water needs to be provided before poor snow conditions limit intake.

The University of Alberta has conducted several studies using snow as a water source for cattle. Pregnant cows using snow as their only water source showed only a minimal difference in their calf's body mass, subcutaneous fat, birth weight or weaning weight. However, lactating cows and their calves need to have access to a water source, since they often lose body weight while consuming snow.

For further information on using snow as a water source, check Alberta Agriculture's website at: www.agric.gov.ab.ca. Select "more FAQ's" (Frequently Asked Questions) and then click on "Livestock Nutrition".

## Managing swath residue and spring grazing

The amount of residue left in the field after swath grazing depends on several factors:

- length of the grazing period
- snow or ice accumulation
- windrow access
- stocking rates
- animal distribution

It is very important to get the cows to clean up the swathed material before the fence is moved to the next grazing area. When snow conditions limit swath grazing during the winter, the cows can return to the swath grazing fields the following spring. If the levels of residue are significant, extra fieldwork, such as cultivating or harrowing may be required before seeding the next crop. The following steps can be used to manage field residue.

### Reducing swath grazing carryover:

- Make swaths as deep as possible when swathing. The deeper the swath, the easier it is for the cows to clean it up. Fewer swaths reduce losses due to trampling and bedding by the livestock. Grazing down the windrow can further reduce losses.
- Restrict the amount of swath available to livestock. It is advisable to allocate about three days of grazing with each fence move. Smaller areas result in more uniform consumption of the swaths.
- Before winter, bale areas where access may be limited. Baled feed can be fed if the weather restricts swath grazing.

### Using swaths for spring grazing:

- Regraze the fields during early spring while they are still frozen or after they have dried enough to adequately support livestock. Soil compaction can occur in wet conditions.
- Consider raking windrows before spring grazing. This practice will enhance the cleanup during spring grazing.
- Save some swaths specifically for spring grazing with nursing cows. Swaths can serve as a source of early grazing before turnout to perennial pastures. This approach will allow the plants in the perennial pastures a longer time to establish themselves before the initial spring grazing.
- Remember that nursing cattle require supplemental feed when cleaning up the residue.

### Managing non-grazed residue:

- Bale any unused swath material in the spring. The use of an electric fence will help protect unused swaths for spring baling. This material can be used in the next winter feeding period.
- In grazed areas, harrowing or cultivation may be required to help incorporate large amounts of residue; however, most air seeders are now designed to seed in trash, so swath residue is not a major problem.

## Managing manure

On average, a 1,000 pound cow produces 50 to 60 pounds of manure and urine per day. Since swath grazing forces the cattle out on the field during the day, manure deposited during that time is distributed on the land. This practice reduces the amount of manure to be hauled out during the spring, lowering manpower and equipment costs. There is less odor and runoff because less manure is concentrated in a confined area.

Caution must be taken where animals are bedded during the swath grazing period. Cattle bedding in treed areas will deposit high amounts of manure and urine there, which results in fewer nutrients on the cropland as well as pollution problems. Piling and spreading the manure from the treed area is often difficult.

Consider using portable windbreaks and bedding to encourage the cows to remain on the fields (Figure 3). Periodic movement of the portable windbreaks allows the manure to be deposited on the land and minimizes significant accumulations in any one spot. Spring fieldwork can then be done without problems due to excess manure accumulation.

*Figure 3. Portable windbreak.*

## Bedding

It is advisable to provide bedding for swath grazing cows. Straw bedding can be used as part of the wintering ration, thus extending the use of the swaths. Observations at Lacombe have shown that cows wasted up to 25 per cent of the available swaths by using the material for bedding. Significantly more manure was deposited on the swaths when bedding was not provided. When bedding was provided, feed wastage dropped from 25 to 10 per cent.

# Wildlife considerations

It is important to assess potential conflicts with wildlife before swath grazing. Wildlife problems tend to be the greatest in the Grey and Black soil zones. Deer, elk, ducks and geese can trample and defecate on swaths left for grazing.

The severity of the winter and the amount of native feed available will influence where wildlife will look for feed. There is some indication that deer and elk prefer oat swaths over barley swaths.

Try to scare the deer and elk away at the start of the swath grazing season before they get into the habit of eating swaths. Allowing hunting on fields that are to be swath grazed may temporarily scare the deer and elk away. In cases where ducks and geese have removed the exposed grain heads, the quality of the green leafy material might still be adequate to meet the dry cows' nutrient requirements

If the wildlife losses are a major concern, other feeding systems should be considered. Local Fish and Wildlife officers may be able to suggest acceptable scaring methods for wildlife.

# Economics of swath grazing

Feed costs are the largest and most manageable expense for cattle operations. Decreasing the feed cost per unit of production ($/lb weaned) will directly improve the overall profitability of a cow-calf operation.

Feed costs can be lowered with grazing because this method tends to be a cheaper way of maintaining cattle when compared to drylot feeding. In essence, swath grazing "buys" grazing days or extends the grazing season and provides the opportunity to lower winter feeding costs by reducing the number of drylot feeding days required.

### How to assess swath grazing

To assess swath grazing, producers need to evaluate both the drylot and grazing operations. Drylot feeding costs can be grouped into two categories:

1. feed and bedding cost
2. yardage cost

The feed and bedding cost element is calculated as the market value of feed and bedding delivered to the cattle. Yardage relates to the operational and "business structure" costs of feeding and maintaining cattle in a drylot. These costs include overhead, or fixed costs (depreciation on sheds, corrals, water systems, machinery used, etc.), as well as the variable costs of delivering the feed (fuel, repairs and maintenance, labour, corral cleaning, etc.).

With swath grazing, many of these costs can be reduced or eliminated as they are replaced by the cost of the swaths plus the cost of managing the cattle in the field.

As part of the swath grazing research program at Lacombe, an in-depth survey was conducted to assess the costs associated with feeding stored feed versus swath grazing on Alberta farms. Results from this survey show that the costs of swath grazing were approximately 50 per cent less than the on-farm costs for feeding stored feed.

Since swath grazing will occupy a site that had previously grown a crop, it is important to consider the value of the forgone cereal or forage crop when determining the economic value of a swath grazing program.

### Using a partial budget

A partial budget is a simple tool that can be used to compare the economics of swath grazing versus feeding baled greenfeed. The objective in the partial budgeting process is to isolate only those elements that change as the result of the adoption of a new management practise. In this example, we want to compare the costs of using a field for swath grazing with the costs associated in using the same field to produce green feed for use in a feed yard. If the partial budgeting process indicates a Net Advantage, then swath grazing could offer a viable winter feeding strategy. Table 2 provides a example of a partial budget comparison of swath grazing with feeding baled green feed.

The following outline summarizes the key revenue and cost elements needed to analyze the swath grazing decision. There are three main budget areas to consider:

- greenfeed crop – crop production costs, baling, winter feed handling costs
- swath grazing crop – crop production costs
- cattle feeding costs – yardage costs, grazing costs

**Table 2. Partial budget form**

| **What is to be done? Clearly define the decision:** Swath grazing barley instead of making greenfeed bales and feeding them to cows. | |
|---|---|
| **Swath grazing costs** | **Feed yard costs** |
| Grazing costs: $32.40/acre<br>($0.15/AUD* 216 AUD/acre) | Drylot yardage cost: $108/acre<br>($0.50/AUD* 216 AUD/acre)<br>Baling and picking: 58.40/acre |
| Total costs for grazing swaths: $32.40/acre | Total costs for feed yard: $108 + 58.40 = $166.40/acre |
| **Net advantage or disadvantage for swath grazing**<br>Swath grazing advantage $134.00/acre ($166.40 - 32.40 = $134/acre) | |

* It is very important that all the units are on the same basis (i.e. $/acre or $/AUD)

## Partial budget assumptions for Table 2

### Swath grazing/Greenfeed crop

*Production cost*: Crop production costs for swath grazing or greenfeed production are assumed to be equal from seeding to swathing.

*Forage production*: Based on barley swath grazing trials in Lacombe (Table 1), forage yields are assumed to be 7,300 lbs/acre (dry matter) for both swath grazing and green feed.

*Feeding losses*: A feeding loss of 20 per cent has been assumed for feeding both baled greenfeed and for swath grazing.

*Baling and picking costs*: Assumed 5.84 bales/acre at $10/bale = 5.84 * $10/bale = $58.40/acre.

*Feeding days per acre*: Daily feed intake is assumed to be 27 lbs of dry matter per day for both feeding systems. Based on this level of feed intake, the number of feeding days available would equal 216 days/acre for either feeding system (7,300 lbs D.M.*.80) /27.

*Grazing costs*: Grazing costs for swath grazing are assumed to be $0.15 per AUD or $32.40/acre (.15 *216 feeding days/acre). Grazing cost based on field research by the Economics Unit of Alberta Agriculture, Food and Rural Development.

*Yardage cost*: For the bale feeding system, yardage costs are assumed to be $0.50 per AUD or $108 per acre ($0.50*216 feeding days/acre). Yardage cost based on field research by the Economics Unit of Alberta Agriculture, Food and Rural Development.

These budget assumptions are now used in the partial budget format (Table 2). It is important that all costs and revenues are calculated with a common unit such as $ per acre. In this specific example, the partial budget process indicates that swath grazing provides a positive return of $134 per acre, which would suggest there are some advantages to using swath grazing. It is important to remember that partial budgets only deal with immediate changes in revenues and costs and are targeted more towards short-term decisions.

** AUD refers to an "animal unit day," which is a standard measure for a 1,000 lb cow for a day. For example, if the yardage cost for AUD is $0.50 then the cost for 1,350 lb cow would be $0.50 *1.35 or $0.67per day.

If swath grazing is to become a longer term feature of the farm business, replacing crop and/or forage production, a more complete analysis that factors in the relationship with other farm business enterprises is advised. Some considerations to be included in this analysis:

- Will swath grazing fit in with longer term cropping plans and rotations?
- Will it provide a comparable return on the land asset, considering the range of crops that can be grown on the land?
- How will swath grazing fit in with the existing perennial forage grazing system?
- Can feeding facilities/equipment be adjusted (e.g. via downsizing equipment or expanding numbers fed)?
- What are the risks associated with swath grazing as opposed to feeding in drylot?

## Swath grazing calculator

This calculator is designed to provide a cost comparison between conventional winter feeding systems and swath grazing. Go to Alberta Agriculture's website: Ropin' the Web (www.agric.gov.ab.ca) and click on "calculators." Select the "Livestock" category, and then click on the calculator called "Swath Grazing."

# Summary

Swath grazing is a viable option for many livestock producers. The practice offers the potential to reduce feed costs, labor costs and manure handling. As with any new management practice, creating a successful swath grazing program requires planning. Producers need to carefully assess field characteristics, animal condition and options for crops, water sources, shelter, fencing, residue management and manure management. The viability of swath grazing depends largely on local conditions, snow depth and wildlife problems, and producers need to assess the economic feasibility for your own situation.

Monitoring the animals during swath grazing is essential. Diligent livestock management principles need to be applied to keep the animals healthy. Supplemental feed may be necessary during periods of cold temperatures and heavy snowfalls. Maintaing body condition score is critical for success.

By planning and following the guidelines described in this publication, producers can develop a suitable swath grazing program for their farming operation.

### References and information sources

The information for this publication was developed from the following publications and the experience of over 100 producers who participated in the 1997 Swath Grazing Survey prepared by Alberta Agriculture, Food and Rural Development and Saskatchewan Agriculture and Food.


Aasen, A., Baron, V., Clayton, G., Dick, C., McCartney, D. 2004. Swath Grazing Potential of Spring Cereals, Field Pea and Mixtures with Other Species. Canadian Journal of Plant Science.

Alternate Winter Feeding System for Beef Cows, Canada Alberta Beef Development Project #97AB016, Alberta Agriculture, Food and Rural Development, Edmonton, Alberta.

Klein, L., Winter Swath Grazing. Grazing and Pasture Technology Program, Regina, Saskatchewan, 1996.

Lardner, B. 2003. Extending the Grazing Season with Annual Crops. Western Beef Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan.

McCartney, D., Basarab, J.A., Okine, E.K., Baron, V., Deplame, A.J. 2004. Alternative Fall and Winter Feeding Systems for Sping Calving Beef Cows. Canadian Journal of Animal Science.

McCartney, D., Research Summary of Swath Grazing. Western Forage Beef Group Grazing School Proceedings, Agriculture and Agri-Food Canada, Lacombe, Alberta, 2004.

McCaughey, P., Small, J., Scott, S., Irvine, B. 2002. Foxtail Millet and Corn: New Crops to Extend Grazing Season and Cut Feeding Costs. Agriculture and Agri-Food Canada, Research Centre, Brandon, Manitoba. Pub. No. 227

Young, B.A., Tennessen, T., Effect of Snow as a Water Source on Beef Cows and their Calf Production. Canadian Journal of Animal Science, 1991, 71(2): 585-588.


### For more information

Alberta Ag-Info Centre 1-800-882-7677.

Saskatchewan Agriculture Knowledge Center 1-866-457-2377.

Manitoba Agriculture – contact your local forage or livestock specialist.


**Information prepared by:**

Gordon Hutton – Forage Technology Transfer Specialist, Alberta Agriculture, Food and Rural Development

Brian Perillat – Production Economist, Alberta Agriculture, Food and Rural Development

Duane McCartney – Forage/Beef Management Researcher, Agriculture and Agri-Food Canada

Adele Ohama – Forage/Beef Management, Agriculture and Agri-Food Canada



**Research support:**

Arvid Aasen, Dr. Vern Baron, Dr. John Basarab, Dr. George Clatyon, Campbell Dick, Dr. Solomon Kibite (deceased), Duane McCartney, Adele Ohama, Dr. Erasmus Okine, Dave Young, Livestock and Forage staff from the Western Forage Beef Group and the Agriculture Canada Research Centre in Lacombe, Alberta, and Melfort, Saskatchewan.

Thanks to those livestock producers across western Canada who provided production information on the use of swath grazing. Financial support of the research was provided by Agriculture and Agri-Food Canada and the Canada Alberta Beef Development Fund.

11/04/2M