

## ADOPT FINAL REPORT - Project # 20090446

### Project Identification

1. **Project Title:** Stockpiling Perennial Forages
  2. **Project Number:** 20090446
  3. **Producer Group Sponsoring the Project:** Saskatchewan Forage Council (SFC)
  4. **Project Location(s):**
    - Lanigan, SK – Western Beef Development Centre
    - Biggar, SK – Dean Tavanetz
    - Ituna, SK – Aaron and Adrienne Ivey
  5. **Project start and end dates:**
    - October 2009 - February 2010
  6. **Project contact person & contact details:**
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### Objectives and Rationale

#### 7. **Project objectives:**

This project was intended to demonstrate different methods to stockpile and utilize perennial forages, providing producers with a practical look at potentially low-cost options to reduce winter feeding costs for beef cattle.

#### 8. **Project Rationale:**

With feed costs, mainly conserved feeds such as hay and silage, accounting for approximately 65% of the maintenance of a beef animal, any opportunity to reduce costs is a benefit to livestock producers. Through demonstration sites, producers were given the opportunity to see low-cost winter grazing strategies being utilized within local beef operations.

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### Methodology and Results

#### 9. **Methodology:**

The Western Beef Development Centre near Lanigan, SK and two producer co-operators (located near Biggar, SK and Ituna, SK) provided the three sites included in this project. Throughout the project, each co-operator recorded data related to site location, animal management, grazing periods, plant species grazed, labour/time and any other pertinent details.

Treatments at each site included: swathed stockpiled forage and standing stockpiled forage, with each treatment grazed during the traditional winter feeding period. The co-operators swathed forage late in the summer and fall season (2009) and grazed the treatments later into the fall and into the winter months (2009/2010). Co-operators recorded grazing periods and number of animals grazing each treatment. Utilization on each of the stockpiled standing and stockpiled swathed grazing treatments was assessed by the number of animal grazing days available at each site and treatment.

Feed samples were collected and analyzed to quantify any differences in quality between the two grazed treatments at each site.

## 10. Results

### Western Beef Development Centre – Lanigan, SK

The Western Beef Development Centre site was swathed in mid-August and grazed beginning in mid-October. Fifteen cows (average 1300 lbs = 1.3 animal units) were placed in each of the two treatments on October 20. On November 9, the livestock in the swath-grazed treatment were removed and placed in with the livestock in the standing forage treatment, for a total of 30 cows grazing this treatment until November 16.

#### Details of the Lanigan site – Western Beef Development Centre

Site Description	Treatment	Cutting date	Grazing dates	Grazing capacity	Quality
Black, silty loam; mixed alfalfa/grass	Swathed 18 acres	August 26, 2009	15 cows October 20 – November 9 (21 days)	22.8 animal unit days*/ac	CP (%) = 12.6 TDN (%) = 57.8 RFV = 89
	Standing 16 acres	N/A	15 cows October 20 – November 9 (21 days); 30 cows November 10- 16 (7 days)	42.6 animal unit days/ac	CP (%) = 9.8 TDN (%) = 58.7 RFV = 95.5

1 animal unit = 1000lbs

The standing forage treatment provided almost double the grazing capacity as the swathed forage. After the forage was cut in late August, the co-operator reported that the weather in September and October was quite cool. As well, the second-cut regrowth on the swathed treatment was poor and the swaths were very thin. The weather in November improved and the co-operators noticed that the forage began to grow. In fact, it was noted from visual observations that the livestock on the swathed treatment grazed more of the regrowth than the swath itself.

The standing forage also grew considerably in the unusual heat of November, thus increasing the available grazing capacity of the standing forage. Visual observations noted that an estimated 30% of standing forage remained following grazing of this treatment.

Quality samples from each treatment (samples collected in early September) reported that crude protein content was slightly higher for the swathed forage as compared to the standing treatment; whereas TDN estimates were quite similar. Forage quality for both treatments was adequate for

wintering beef cows.

Dean Tavanetz – Biggar, SK

The Biggar site included a stand of alfalfa/cicer milkvetch/bromegrass (seeded in 2002) for each of the two demonstration treatments. The site was not grazing or hayed in the spring/summer of 2009 prior to being utilized in the fall/winter of 2009/2010 for these treatments. The 350-acre standing forage pasture was grazed by 265 beef cows (average 1400 lbs = 1.4 animal units) for approximately 8 weeks. The swathed treatment included 25 acres and carried 235 weaned calves (average 475 lbs = 0.5 animal units) for four weeks. The weaned calves were also fed four lbs (1.8 kg) rolled barley – which was a departure from the planned project methodology.

Details of the Biggar site – Dean Tavanetz

Site Description	Treatment	Cutting date	Grazing Dates	Grazing capacity	Quality
Dark Brown soil, fine sandy to sandy loam; alfalfa/grass/cicer milkvetch	Swathed 25 acres	September 15, 2009	235 calves December 11 - January 8 (28 days)	131.6 animal grazing days/ac**	CP (%) = 9.0 TDN (%) = 58.5 RFV = 84
	Standing 350 acres	N/A	265 cows December 3 - January 29 (58 days)	61.5 animal grazing days/ac	CP (%) = 7.5 TDN (%) = 56.7 RFV = 80

\*1 animal unit = 1000lbs

\*\* note: grazing capacity value reflects grazed swathed forage plus an estimated 4lbs of rolled barley per animal per day

It is important to note that at this site there were a number of management factors implemented which make it difficult to compare grazing capacity between the swathed and standing treatments. Different classes of livestock grazed each treatment (mature beef cows versus weaned calves) and the weaned calves were supplemented with 4 lbs of rolled barley/animal/day. While the decision to supplement calves grazing swathed stockpiled forage was a necessary management decision in order to ensure adequate nutrition for the animals, it makes it extremely difficult to compare grazing capacity between the two treatments

The swathed treatment (25 acres) was cut on September 15 with quality samples collected on both treatments in early December, just prior to cattle beginning grazing. The swathed treatments had slightly higher quality parameters than the standing forage. Based on visual observations, utilization was very high in the swathed treatments but livestock densities were also very high relative to the standing forage treatment.

In terms of management/labour, the co-operator noted that he spent approximately 20 minutes per acre preparing the swath-grazing treatment (cutting and raking), three hours installing the fencing, and another hour per week moving fence and checking the animals in the swath-grazing treatment.

In the standing stockpiled treatment, the co-operator spent one and a half hours per day opening ice to water the livestock. All management activities (checking animals, providing water, etc.) will be specific to each producer’s management practices and grazing operation. Cost comparisons specific to

traditional winter feeding versus grazing stockpiled forages are presented in an upcoming section of this report.

Aaron and Adrienne Ivey – Ituna, SK

The Ituna site included a stand of 100% alfalfa (seeded in 2008) for grazing treatments. 2009 was the first year of hay production for the stand with a first cut taken in mid-May and regrowth utilized as stockpiled treatments for this project. One group of 556 cows (average 1300lbs = 1.3 animal units) moved from one treatment to another over the length of the project. Each treatment included approximately 80 acres. The swathed treatment was cut on October 25 to coincide with estimated plant dormancy. The crop was grazed four months later in early to mid-February.

Details of the Ituna site – Aaron and Adrienne Ivey

Site description	Treatment	Cutting Date	Grazing Dates	Grazing Yield	Quality
Black, loam; alfalfa	Swathed 80 acres	October 25, 2009	556 cows February 8 – 14 (7 days)	63.2 animal grazing days/ac	CP (%) = 19.6 TDN (%) = 60.5 RFV = 110
	Standing 80 acres	N/A	556 cows February 2 – 7 (6 days)	54.2 animal grazing days/ac	CP (%) = 21.1 TDN (%) = 60.0 RFV = 107

\*1 animal unit = 1000lbs

Grazing capacity was only slightly greater for the swathed treatment as compared to the standing forage. Forage quality (samples collected in early February) including crude protein, energy (TDN %) and Relative Feed Value (RFV) were very similar for both treatments.

For their own cost analysis, the co-operators estimated a rate of \$7.00/acre for cutting the swathed acres. They reported no other differences in costs between treatments once the treatments were prepared; the co-operators felt the management time was no different between the two stockpiled treatments.

Visual observations noted that heavy snowfall may have preserved the leaves on the standing alfalfa resulting in little difference in quality between the swathed and standing forage. The level of forage utilization was noted to be very similar between the treatments. However, the co-operators did note that wet conditions appeared to result in more waste as compared to grazing stockpiled forage when the ground is frozen.

**Low cost wintering options :**

This project very clearly demonstrated at all three sites that stockpiled grazed forages can reduce wintering costs for beef cows. All three co-operators noted the reduced management/labour required to graze either swathed or standing stockpiled forage as compared to traditional winter feeding systems.

Previous western Canadian research has shown that the costs (including direct costs, yardage and labour) associated with traditional drylot wintering of a beef cow ranges from \$1.08 to \$1.42 per cow per day. In comparison, swath grazing of annual forages is estimated at \$0.63 to \$0.71 per head per day.

At the three project sites, swathing stockpiled forage was an additional cost as compared to the standing stockpiled forage. The 2010-11 Custom and Rental Rate Guide published by Saskatchewan Agriculture quotes the custom rate for swathing at \$14.20 per acre (including the basic labour rate of \$14.00 per hour). Based on these figures and the co-operators estimated costs, the added costs for swathed stockpiled forage as compared to standing stockpiled forage may equal \$7.00-\$14.20 per acre.

With regard to management costs of the swathgrazed versus standing stockpiled sites, the co-operator at the Ituna site noted no major difference in management time between the two treatments. Although the Biggar area co-operator noted a difference in management time required for watering, fencing, etc. between the two treatments, this was largely due to the site chosen for grazing standing stockpiled forage and was not directly related to management aspects of standing forage. Although management time can add significantly to the cost of various feeding systems, each situation is very unique based on fencing requirements, watering systems, etc. and therefore it would be inaccurate to compare costs unless the same systems are being utilized in all treatments.

Considering both management/labour and the cost to swath forage, these management systems were demonstrated at these three sites to be a lower cost method of wintering beef cows than the traditional system of baling forage, hauling to a feeding site, daily feeding and the costs to remove manure, etc. All three co-operators in this project demonstrated through field days and project communications that within their enterprises, grazing stockpiled forage was a low-cost method to winter cattle, providing other producers the opportunity to consider how these management strategies fit within their cattle operations.

#### **Extension Activities:**

Extension activities completed as part of this project included:

- Western Beef Development Centre Winter Grazing Day, Lanigan, SK (December 11, 2009) – 60 attended
- Winter Grazing Tour, Biggar, SK (January 13, 2010) – 20 attended
- Winter Grazing Tour, Ituna, SK (February 18, 2010) – 25 attended (see Appendix A for field day announcements and tour images)
  
- Information regarding this project was included on the Saskatchewan Forage Council website (average hits of 1100+ per month) as well as in the May 21, 2010 edition of the SFC *Forage and Livestock eNews* which has an electronic distribution of 400+ with an unknown number of additional forwarded distributions.

It must be noted that the most valuable aspect of this demonstration project has been the peer-to-peer discussions that were facilitated at field days and through extension materials. With a visual and practical example of how co-operators made use of stockpiled forages within their own operations, other producers could begin to explore any opportunities that may exist for them to integrate this type of management to reduce wintering feeding costs.

## **11. Conclusions and Recommendations**

The purpose of this project was to demonstrate options for stockpiling perennial forages for use as a grazed resource during the fall and winter months. A question to be evaluated at the three co-operator sites was whether swathing forage maintained the quality of forage and increased utilization as compared to grazing stockpiled standing forage. If quality and utilization of forage is greater for

swathed versus standing, is the added cost of swathing justified?

In all of the treatments in all locations, there appeared to be no correlation between swathing and forage quality. In some cases, forage quality was slightly less in swathed versus standing forage. This may be attributed to leaf-loss during handling. It is also important to note that forage species composition may have had an effect on forage quality loss during swathing.

Actual forage utilization by grazing animals is understandably correlated with each site location and grazing management. At the Ituna site, the co-operator noted no difference in utilization between swathed versus stockpiled forage. However, at the Lanigan site it was noted that utilization was greater on the swathed treatment as compared to the standing forage. With any winter grazing options, it is important to note that forage utilization will vary depending on environmental conditions, forage type, quality and grazing management decisions.

The co-operator in Ituna anticipated that the standing alfalfa would lose quality due to leaf-loss once dormancy set in. However, heavy and timely snow buried the alfalfa and the dormant plants were not exposed to the elements. Protection provided by the snow may have preserved the alfalfa quality. Because different classes of livestock were used and one group was supplemented barley, it is difficult to make distinct conclusions from the Biggar site. However, Mr. Travanetz suggested the added cost of swathing may not have been justified.

There was no clear indication at these three sites that swathing forage provided additional grazing capacity, whether through increased forage quality or utilization. The added costs of swathing forage as compared to grazing standing forage may not be justified, however this management decision will need to be determined by each individual producer at his specific location and within the parameters that he is managing.

The results of this project do illustrate that stockpiling perennial forages is a viable option to consider for wintering beef animals. Producers need to consider forage type, local environmental conditions, fencing and water supply, as well as animal management expertise, before implementing a winter grazing option. These demonstration sites and the resulting communication materials provided extremely valuable and practical information as well as a first-hand look at opportunities that should be explored.

A more detailed evaluation of these treatments, beyond what demonstration sites can achieve, is recommended, including standardized livestock classes, forage species grazed and timing of cutting and grazing.

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## **Supporting Information**

### **12. Acknowledgements**

The Ministry's support for the project was acknowledged on signage displayed at each site (see Appendix B), on all field day announcements (Appendix A) and in all project communications, including industry articles (Appendix C).

Industry support was also noted on all field day notices, project site signage and communications (Appendices A, B and C)

### **13. Appendices**

Appendix A – Project Field Days

Appendix B – Project Signage

Appendix C – Project Communications

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### **Abstract**

#### **14. Abstract/Summary**

With the assistance of ADOPT funding, the Saskatchewan Forage Council collaborated with three co-operators to demonstrate different methods to stockpile and utilize perennial forages, providing producers with a practical look at potentially low-cost options to reduce winter feeding costs for beef cattle. At sites located near Lanigan, Biggar, and Ituna, Saskatchewan, cattle grazed standing and swathed stockpiled forage during the fall and winter of 2009/2010. There was no clear indication at these three sites that swathing forage provided additional grazing capacity, whether through increased forage quality or utilization. The added costs of swathing forage as compared to grazing standing forage may not be justified, however this management decision will need to be determined by each individual producer at his specific location and within the parameters that are being managed. Field days were held at all three sites (Lanigan – December 11, 2009; Biggar – January 13, 2010; Ituna – February 18, 2010) with a total of approximately 105 in attendance. As well, a number of communication materials were compiled to facilitate widespread messaging about the project. The results of this project do illustrate that stockpiling perennial forages is a viable option to consider for wintering beef animals. Producers need to consider forage type, local environmental conditions, fencing and water supply, as well as animal management expertise, before implementing a winter grazing option. These demonstration sites and the resulting extension provided extremely valuable and practical information as well as a first-hand look at opportunities that should be explored. With a visual and practical example of how co-operators made use of stockpiled forages within their own operations, other producers could begin to explore any opportunities that may exist for them to reduce wintering feeding costs.

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**Appendix A – Project Field Days**

**Western Beef Development Centre**  
Division of PAMI  
and  
**Blairs.Ag Cattle Company**  
present  
**2009 WBDC WINTER FIELD DAY and CLASS OF 09 ANGUS HEIFER SALE**  
**FRIDAY & SATURDAY, DECEMBER 11 and 12, 2009**  
at the  
**Termuende Research Ranch - Lanigan SK**

**FRIDAY DECEMBER 11 – WBDC WINTER FIELD DAY**

12:30 PM Registration & Presentations (Calving Barn)

- Grazing Stockpiled Perennial Forages
- Sod Seeding Fall Rye with AGROPLOW

1:30 PM to 4:00 PM Winter Grazing Field Tours (tentative schedule)

- Grazing Crop Residues with Beef Cows
- Backgrounding Calves on Annual Forages
- Bale Grazing Calves Supplemented with DDGS
- Nutrients on Beef Cattle Winter Grazing Sites
- Winter Watering System – Frost Free Nose Pump

4:00 PM Presentation (Calving Barn)

- Saskatchewan Cow-Calf Cost of Production Program

4:30 PM Coffee - Doughnuts – Discussion (Coverall)  
(Class of 09 Angus Heifers on Display)

6:00 PM Supper (Lanigan)

**SATURDAY DECEMBER 12 – BLAIRS.AG CLASS OF 09 ANGUS HEIFER SALE**

10 AM Class of 09 Heifer on Display (Coverall)

12:00 PM LUNCH (Calving Barn)

1:00 PM Blairs.Ag Junior Scholarship Program and Class of 09 Sale (Calving Barn)



*Cows graze stockpiled forage at WBDC site*



*Participants at WBDC Winter Field Day – December 11, 2009*



**The Saskatchewan Forage Council  
Invites you to a  
Winter Grazing Tour**

in cooperation with  
Saskatchewan Ministry of Agriculture  
and the Herschel and Biggar Grazing Clubs

**Wednesday, January 13, 2010**  
Biggar, Saskatchewan

- When:** 1:00PM – Wednesday, January 13, 2010
- Where:** Meet at Bielby Hall in Biggar  
(322 Main Street – back of the Majestic Theater)
- Why:** Hear about current Saskatchewan Forage Council  
ADOPT projects  
Tour winter grazing sites  
Talk with producers who are using winter grazing on  
their operations

**Registration is free of charge**

**Coffee and snacks will be provided**

**Please note that we will be touring outdoor sites, so be sure to  
bring appropriate winter weather wear.**

Funding for this project provided the Agricultural Demonstration of Practices and  
Technology (ADOPT) program under the Canada-Saskatchewan Growing  
Forward agreement.



Saskatchewan  
Ministry of  
Agriculture



Agriculture and  
Agri-Food Canada

Agriculture et  
Agroalimentaire Canada

**Growing Forward** 



*Producers discuss stockpiled forage options near Biggar, SK – January 13, 2010*



**The Saskatchewan Forage Council  
Invites you to a  
Winter Grazing Tour**

in cooperation with  
Saskatchewan Ministry of Agriculture  
and Ducks Unlimited Canada

**Thursday, February 18, 2010**  
Ituna, Saskatchewan

- When:** 1:00PM – Thursday, February 18, 2010
- Where:** Meet at Ituna Curling Rink  
(23, 2<sup>nd</sup> Street SW – North of School)
- Why:** Hear about current Saskatchewan Forage Council  
ADOPT projects  
Tour winter grazing sites  
Talk with producers who are using winter grazing  
successfully on their operations

**Registration is free of charge**

**Coffee and snacks will be provided**

**Please note that we will be touring outdoor sites, so be sure to  
bring appropriate winter weather wear.**

Funding for this project provided the Agricultural Demonstration of Practices and  
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Agriculture and  
Agri-Food Canada

Agriculture et  
Agroalimentaire Canada



Saskatchewan  
Ministry of  
Agriculture

**Growing Forward**



*Aaron Ivey (centre) discusses stockpiled forage options with fellow producers –  
Ituna, SK, February 18, 2010*

Appendix B – Project Signage

**STOCKPILING PERENNIAL FORAGES**  
A Saskatchewan Forage Council Project  
Producer Co-operator:  
*Aaron Ivey*



An Agricultural Demonstration of Practices and Technologies (ADOPT) project with funding provided under the Canada-Saskatchewan Growing Forward Agreement



Stockpiling site (Ituna, SK) signage

**STOCKPILING PERENNIAL FORAGES**  
A Saskatchewan Forage Council Project  
Producer Co-operator:  
*Dean Tavanetz*



An Agricultural Demonstration of Practices and Technology (ADOPT) project. Funding provided under the Canada-Saskatchewan Growing Forward Agreement



Stockpiling site (Biggar, SK) signage

## **Appendix C – Project Communications**

*The following article appeared in the May 21, 2010 edition of the SFC Forage and Livestock eNews:*

### **ADOPT Project: Stockpiled Grazing Methods for Perennials**

Recently, local producers in Biggar and Ituna as well as a research team at the Western Beef Development Centre tried a relatively new grazing method; swath-grazing perennials. The motivation behind this project was to investigate the feasibility of preserving the feed value of forages without baling, transporting or storing it.



The project was designed to answer questions such as; "Is it possible to preserve forage quality and achieve adequate forage utilization while reducing hay storage costs?" and "Does the cost-saving of not baling pay for the loss of quality and reduced utilization?"

These three demonstration sites were all cut in the fall of 2009 and grazed in late fall (Lanigan), mid-winter (Biggar), and early spring (Ituna). Feed samples were taken during grazing to give an indication of nutritive value and number of animals and grazing days were recorded. In addition, swathed treatments were compared to standing stockpiled perennial forage at all three sites.

#### **Suitable Forage Crops**

Almost all perennial forage crops can be used for swath grazing. Perennial legumes such as alfalfa as well as the grasses commonly used for hay production are suitable. Cicer milkvetch may be even better suited to this type of system as it tends to hold its leaves better in the fall than alfalfa thus retaining higher forage quality during the winter grazing period. Two grasses that are not recommended for this type of grazing are timothy and orchardgrass. These grasses store their carbohydrate reserves at the base of the plant. Trampling and snow packing on these grasses can reduce the insulating value of snow resulting in root damage and winter kill.

#### **Timing is Important**

Ideally, the forage crop should be laid in the swath at a stage of reasonable quality. The stage should also coincide with dormancy to reduce the chance of regrowth. For perennial forages, swathing should ideally occur just prior to, or soon after the first heavy frost.

#### **Grazing Management**

To ensure optimum utilization, limit access to swaths with temporary electric fencing.

Many forage plants need an open canopy in the spring to begin growth. Alfalfa, for example, has difficulty growing through trash. For this reason, it's important to ensure the majority of the windrow is grazed to allow vigorous growth the following spring.

Avoid grazing when the soil is wet to prevent crown damage. It is also important to consider that high traffic can reduce snow pack and thus the insulating ability of the snow. Extreme cold temperatures can damage alfalfa crowns and cause winter kill.

The Saskatchewan Forage Council would like to thank the producer co-operators on this project (Dean Tavanetz and Aaron Ivey) as well as technical assistance from the Saskatchewan Ministry of Agriculture, and the Western Beef Development Centre. This project is an Agricultural Demonstration of Practices and Technologies (ADOPT) with funding provided under the Canada-Saskatchewan Growing Forward Agreement.

Photo Credit: Saskatchewan Forage Council