



# Western Beef Development Centre

## ARE PERENNIAL FORAGES PROFITABLE?

### Introduction

In the spring of 2002 the Western Beef Development Centre (WBDC) entered into a contract with Ducks Unlimited Canada (DUC) to outline the economics associated with seeding land to perennial forage used for grazing and/or hay production. This fact sheet displays the costs and returns that arose in 2002 as producers attempted to establish perennial forage in the Aspen Parkland and Moist Mixed Grassland Ecoregions of Saskatchewan. See Figure 1 for a visual description of the area under study.

Participants in this on-going program receive assistance analyzing:

1. The returns and expenses from the perennial forage seeded in 2002 and its future production, as well as
2. The economics of other enterprises which make up their operation --such as their cowherd, feedlot, breeding heifers, etc.<sup>1</sup>

### Spring 2002

2002 was a very dry year for many areas of Saskatchewan. As a result many individuals were reluctant to try and establish perennial forage. Those that did seed perennial forage in this study often reduced the amount of fertilizer used or did not use pesticides on their crops when they normally would have. Producers chose this production decision because they did not want to spend additional money on a crop not establishing because of drought, weeds and/or grasshoppers. The wide spread drought also affected production decisions as some producers spent very little on inputs because of the cash "squeeze" that arose when the costs for 1) seeding a

<sup>1</sup> Go to [www.wbdc.sk.ca](http://www.wbdc.sk.ca) and select "fact sheets" for cost of production information regarding Saskatchewan cowherds, feedlots, pastures, etc.

crop and 2) purchasing feed for livestock, occurred at the same time.<sup>2</sup> As a result many of the average costs per acre reported in this article such as fertilizer, herbicide/insecticide and harvesting, are lower than one might expect in a "normal year."



Figure 1. Aspen Parkland and Moist Mixed Grassland Ecoregions

### Production

In the year of establishment cattle do not typically graze newly seeded perennial forage. However, in 2002 eleven of the twenty-seven newly seeded forage crops in this study were grazed. In many cases producers thought establishment was unlikely

<sup>2</sup> Many cowherds in these ecoregions were not able to graze well into June, given pastures were not growing due to a lack of moisture. Thus, in some cases producers were forced to purchase supplemental feed for their cowherd until grazing became available.

because of the already mentioned drought, excessive weed populations and/or grasshoppers. It will be interesting in 2003 to determine the rate of establishment amongst these forages, given a number of the producers in the study are expecting they will have to re-seed some or all of the acres they attempted to establish in 2002.

### Infrastructure for Grazing

For this analysis we are assuming each participant constructed 1) a 3-strand smooth wire fence (2 hot) with posts 40 feet apart, and 2) a dugout. The cost of materials, labour and equipment used to build the fence is assumed to be \$1700/mile. Digging a dugout large enough to serve a 1/2 section of land

(approximately 270 cultivated acres) is assumed to cost \$3,000.

### Start-Up Costs and Returns in Year 1

The start-up costs and returns for participating producers who seeded a perennial forage crop in 2002 are listed in **Tables 1 and 2**. Table 1 represents those producers who seeded a perennial forage crop with a nurse crop. Table 1 indicates the costs of seeding the crop and constructing a fence and dugout totaled \$151/acre if all costs are expensed in year 1. This was however offset by \$69/acre of production from the nurse crop. Table 2 represents those who only seeded a perennial forage crop. The result was \$103/acre of expenses in year 1 vs. \$14/acre of production (which originated from grazing).

<b>Table 1. Nurse Crop &amp; Perennial Forage Crop: All Start-Up Costs Expensed in 1<sup>st</sup> Year of Project</b>	
<b>Expenses</b>	<b>Average \$/Cultivated Acre</b>
Forage Seed Cost	25.65
Cover Crop Seed Cost	5.27
Seeding Costs	14.46
Herbicide/Insecticide Costs	7.21
Fertilizer Costs	11.49
Opportunity Cost of Using Land	22.63
Cost of Harvesting Yield/Grazing Costs	28.33
Fence Establishment	25.19
Dugout Development	11.11
<b>Total Costs in Establishment Year</b>	<b>151.34</b>
<b>Value of Yield in Establishment Year</b>	<b>69.29</b>
<b>Return in Year 1</b>	<b>-82.05</b>
<b>Seeding Date</b>	May /June
<b>Average # of Acres Seeded</b>	83
<b>New Land Assessment (\$/160 acres)</b>	31,608
<b># of Observations</b>	19
<b>Cover Crops Used</b>	
16 oats; 1 barley, 1 wheat, 1 oats/peas	

<b>Table 2. Perennial Forage Crop Only: All Start-Up Costs Expensed in 1<sup>st</sup> Year of Project</b>	
<b>Expenses</b>	<b>Average \$/Cultivated Acre</b>
Forage Seed Cost	24.07
Cover Crop Seed Cost	0.00
Seeding Costs	9.88
Herbicide/Insecticide Costs	2.24
Fertilizer Costs	1.88
Opportunity Cost of Using Land	23.28
Cost of Harvesting Yield/Grazing Costs	5.43
Fence Establishment	25.19
Dugout Development	11.11
<b>Total Costs in Establishment Year</b>	<b>103.07</b>
<b>Value of Yield in Establishment Year</b>	<b>14.05</b>
<b>Return in Year 1</b>	<b>-89.02</b>
<b>Seeding Date</b>	May/June
<b>Average # of Acres Seeded</b>	106
<b>New Land Assessment (\$/160 acres)</b>	29,466
<b># of Observations</b>	8

**Tables 3 and 4** detail the costs and returns in year 1 when forage seed and seeding costs are amortized according to the expected 9-year lifespan of the forage (including establishment year). Herbicide costs which arose when dealing with annual weed problems in the year of establishment were also allocated over the lifetime of the forage stand, given it was assumed these annual weeds would not be a problem in subsequent years if the forage stand was managed properly. Costs of controlling perennial weeds, which may arise in future years, will be expensed when they are incurred.

Fencing and dugout development costs in Tables 3 and 4 are expensed according to their expected lifetime of 20 years. The economics of the

forage/nurse crop combination detailed in Table 3 reveals expensing initial start-up costs over the proper time period resulted in a return of -\$5.54/acre in year 1. Table 4, which details the economics of only seeding a forage crop, does not appear as profitable in year 1 given the expenses of \$36/acre vs. \$14/acre in production and the fact many of these crops will have to be re-seeded in 2003.

**Table 5** outlines the economics of land seeded to perennial forage with a nurse crop, which was then harvested via combining or baling. Table 5 is provided to the reader given combining or baling is the traditional method of harvesting a nurse crop in the year of establishment.

<b>Table 3. Nurse Crop &amp; Perennial Forage Crop: Start-Up Costs Amortized According to Useful Life</b>	
	<b>Average \$/Cultivated Acre</b>
Forage Seed Cost (9 years)	2.85
Cover Crop Seed Cost	5.27
Seeding Costs (9 years)	1.61
Herbicide/Insecticide Costs (9 years)	0.80
Fertilizer Costs	11.49
Opportunity Cost of Using Land	22.63
Cost of Harvesting Yield/Grazing Costs	28.33
Fencing (20 years)	1.26
Dugout (20 years)	0.56
<b>Total Costs</b>	<b>74.80</b>
<b>Value of Yield in Establishment Year</b>	<b>69.29</b>
<b>Return in Year 1</b>	<b>-5.51</b>
<b>Seeding Date</b>	May /June
<b>Average # of Acres Seeded</b>	83
<b>New Land Assessment (\$/160 acres)</b>	31608
<b># of Observations</b>	19
<b>Cover Crops Used</b>	
16 oats; 1 barley, 1 wheat, 1 oats/peas	

<b>Table 4. Perennial Forage Crop Only: Start-Up Costs Amortized According to Useful Life</b>	
	<b>Average \$/Cultivated Acre</b>
Forage Seed Cost (9 years)	2.67
Cover Crop Seed Cost	0.00
Seeding Costs (9 years)	1.10
Herbicide/Insecticide Costs (9 years)	0.25
Fertilizer Costs	1.88
Opportunity Cost of Land	23.28
Cost of Harvesting Yield/Grazing Costs	5.43
Fencing (20 years)	1.26
Dugout (20 years)	0.56
<b>Total Costs</b>	<b>36.43</b>
<b>Value of Yield in Establishment Year</b>	<b>14.05</b>
<b>Return in Year 1</b>	<b>-22.38</b>
<b>Seeding Date</b>	May/June
<b>Average # of Acres Seeded</b>	106
<b>New Land Assessment (\$/160 acres)</b>	29466
<b># of Observations</b>	8

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## Summary

**Tables 1 and 2** outlined the costs incurred in the initial year of attempting to establish perennial forage. These costs must be considered from a cash flow perspective to ensure your business can withstand the large cash outlay when transitioning from grain to grass. **Tables 3 and 4** outlined the costs and returns in year 1 when start-up costs are amortized over their useful lifetime. These tables are provided so the reader has an understanding of the return on investment earned in the year of

establishment. **Table 5** outlined the economics of seeding perennial forages in combination with a nurse crop, which was harvested via combining or baling.

Future articles from the WBDC and DUC will continue to 1) monitor the returns and expenses from this newly seeded forage in upcoming years and 2) assist producers with the economics of other enterprises which make-up their operation.

**Table 5: Perennial Forage & Nurse Crop Either Combined or Baled: All Expenses Amortized Over Expected Lifetime**

	Average \$/Cultivated Acre
Forage Seed Cost (9 years)	3.02
Cover Crop Seed Cost	5.70
Seeding Costs (9 years)	1.71
Herbicide/Insecticide Costs (9 years)	0.80
Fertilizer Costs	13.28
Opportunity Cost of Using Land	22.33
Cost of Harvesting Yield	36.15
Fencing (20 years)	1.26
Dugout (20 years)	0.56
<b>Total Costs</b>	<b>84.81</b>
<b>Value of Yield in Establishment Year</b>	<b>91.82</b>
<b>Return in Year 1</b>	<b>7.01</b>
<b>Average # of Acres Seeded</b>	85
<b>New Land Assessment (\$/160 acres)</b>	30,005
<b># of Observations</b>	12



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