



Western Beef Development Centre

FROM GRAIN TO GRASS - WHAT ARE THE COSTS?

Introduction

As Saskatchewan emerges from the era of freight rate subsidies producers are searching to find profitable opportunities for their land base. One solution may exist in seeding perennial forages on previously annually cropped land. In the spring of 2000 the Western Beef Development Centre (WBDC) entered into a project with Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR), the Canadian Adaptation and Rural Development Program in Saskatchewan (CARDS) and Lorne Christopherson (a mixed farmer near Weldon, Saskatchewan). This project compares the economics of A) converting productive cropland to perennial forages versus B) continuing to annually crop this type of land.

The production and expenses from “Granrude’s” (three quarter sections of land newly seeded to perennial forage -- 370 cultivated acres), are being compared against “Dahl’s West,” an adjacent ½ section (230 cultivated acres) which has been annually cropped for many years. Both land bases are classified as Kamsack/Shellbrook silty loam and are assessed at approximately \$4,800 - \$5,200 per quarter, under the old assessment system.

Granrude’s (Newly Seeded Perennial Forage) 2000

In the spring of 2000, 278 of the 370 acres comprising “Granrude’s” were seeded to a meadow brome-alfalfa mixture. A nurse crop of oats was seeded with the grass-legume mixture and baled as greenfeed in the fall of 2000. The nurse crop of oats yielded 2.06 tonne/acre of greenfeed, valued at \$40/tonne, and was used to generate some revenue from the land in the establishment year of the project. The additional 92 acres of Granrude’s was seeded to Liberty Tolerant canola in 2000 to also provide income in the first year of the project. The canola yielded 24 bu./acre and was valued at \$6/bu.

In the fall of 2000 a shallow dugout was constructed in the middle of Granrude’s to be used as the primary source of water for the pasture. That fall the entire 370 acres was also perimeter fenced and cross-fenced into 5 separate fields, each of which had access to the centrally located dugout. The gross product and expenses incurred on Granrude’s in 2000 are detailed in **Table 1**.

Dahl’s West (Annual Crop Production) 2000

In 2000 Dahl’s West produced 54 bu./acre of malt barley valued at \$3.08/bu. The gross product and expenses incurred on Dahl’s West in 2000 are listed in **Table 2**.

Table 1: Granrude's 2000

| | \$ Total | \$/Acre |
|--|-------------------|---------------|
| Cultivated Acres: 370 | | |
| Production | | |
| Canola ~ 24 bu/ac @ \$6/bu | 13,248.00 | |
| Green Feed 2.06 tonne/ac @ \$40/tonne | 22,907.20 | |
| Total Gross Product | 36,155.20 | 97.72 |
| Expenses | | |
| Total Seeding | 11,170.58 | 30.19 |
| Total Fertilizer | 8,684.53 | 23.47 |
| Total Herbicide | 4,625.00 | 12.50 |
| Total Swathing/Baling/Harvesting/Hauling | 12,489.99 | 33.76 |
| Land Rent | 11,100.00 | 30.00 |
| Dugout Development | 1,000.00 | 2.70 |
| Total Fencing & Labour Costs | 5,560.00 | 15.03 |
| Forage Establishment Insurance | 834.00 | 2.25 |
| Total Expenses | 55,464.10 | 149.90 |
| Return | -19,308.90 | -52.19 |

Table 2: Dahl's West 2000

| | \$ Total | \$/Acre |
|----------------------------------|------------------|---------------|
| Cultivated Acres: 230 | | |
| Production | | |
| Malt Barley 54 bu/ac @ \$3.08/bu | 38,253.60 | 166.32 |
| Total Gross Product | 38,253.60 | 166.32 |
| Expenses | | |
| Total Seeding | 4,600.00 | 20.00 |
| Total Fertilizer | 7,000.72 | 30.44 |
| Total Herbicide | 5,048.50 | 21.95 |
| Total Harvesting | 7,290.01 | 31.70 |
| Total Tillage | 1,380.00 | 6.00 |
| Land Rent | 6,900.00 | 30.00 |
| Total Expenses | 32,219.23 | 140.08 |
| Return | 6,034.37 | 26.24 |

Granrude's 2001

In the spring of 2001 the remaining 92 acres of Granrude's was seeded to a meadow brome-alfalfa-oat mixture. The other 278 acres of meadow brome-alfalfa, seeded the previous year, was rotationally grazed by 200 cow-calf pairs for 82 days. 8 bulls also grazed on Granrude's for 65 days. Cow-calf pair grazing was valued at \$1.00/day and bull grazing was valued at \$1.50/day. The high stocking rate was achieved because of the young age of the forage stand and moisture reserves in the soil at the beginning of the year.

The cowherd was removed from the pasture on September 10th because dugout water levels were low, not because there was a shortage of grass. Portions of the 278 acres of pasture received only one rotation of grazing. This un-grazed re-growth was "rolled up" into 100 round bales, each weighing 1800 lbs and valued at \$90/bale.

The 200 cow-calf pairs grazed the newly seeded 92 acres of meadow brome-alfalfa-oat mixture from August 1-10, 2001. Again this grazing was valued at \$1.00/cow-calf pair/day. The gross product and expenses incurred on Granrude's in 2001 are listed in **Table 3**.

Dahl's West 2001

Dahl's West, which produced 54 bushels/acre of malt barley in 2000, was seeded to flax (linola) in the spring of 2001. The flax was direct seeded at a rate of 1 bushel/acre into standing barley stubble. In the fall of 2001, 18 bushels/acre of flax (excluding dockage) were harvested. The flax was valued at \$7.56/bu. The gross product and expenses incurred on Dahl's West in 2001 are listed in **Table 4**.

| Cultivated Acres: 370 | | |
|---|------------------|----------------|
| Production | \$ Total | \$/Acre |
| Grazing 200 cow/calf pairs ~91 days @ \$1/day | 18,200.00 | 49.19 |
| Grazing 8 bulls ~ 65 days @ \$1.50/day | 780.00 | 2.11 |
| 100 - 1800lb bales @ \$90/bale | 9,000.00 | 24.32 |
| Total Gross Product | 27,980.00 | 75.62 |
| Expenses | | |
| Land Rent | 11,100.00 | 30.00 |
| Herd Health/Mgmt/Fuel | 1,600.00 | |
| Establishing 92 acres of forage | | |
| Total Seeding @ \$37/acre | 3,404.00 | |
| Total Fertilizer @ \$22/acre | 2,024.00 | |
| Total Herbicide @ \$12.50/acre | 1,150.00 | |
| Forage Establishment Insurance @ \$3/acre | 276.00 | |
| Producing 100 ~ 1800lb bales | | |
| Cutting Hay | 600.00 | |
| Total Baling | 800.00 | |
| Hauling Bales Home | 400.00 | |
| Total Expenses | 21,354.00 | 57.71 |
| Return | 6,626.00 | 17.91 |

| Cultivated Acres: 230 | | |
|-----------------------------|------------------|----------------|
| Production | \$ Total | \$/Acre |
| Flax ~ 18 bu/ac @ \$7.56/bu | 31,298.40 | 136.08 |
| Total Gross Product | 31,298.40 | 136.08 |
| Expenses | | |
| Total Seeding | 4,600.00 | 20.00 |
| Total Fertilizer | 4,701.20 | 20.44 |
| Total Herbicide | 5,865.00 | 25.50 |
| Total Harvesting | 7,705.00 | 33.50 |
| Land Rent | 6,900.00 | 30.00 |
| Total Expenses | 29,771.20 | 129.44 |
| Return | 1,527.20 | 6.64 |

Granrude's 2002

In 2002 Lorne added two additional cross-fenced fields to the already existing five fields. The fields were rotationally grazed throughout the summer with most being grazed twice. Similar to 2001, one field was cut and baled after recovering from a short single period of grazing. In total 90 bales were produced in this field, each weighing 1800 lbs and valued at \$90/bale.

Granrude's supplied 165 cow-calf pairs with grazing from June 12 – October 24 (134 days) and 8 bulls with grazing from July 10 – September 15 (65 days). For this analysis we are assuming the grass consumed by the cows and bulls could have been rented to someone else for \$1/day and \$1.50/day, respectively.

Due to a shortage of moisture the shallow dugout on Granrude's was dry in the spring of 2002. The solution was to rent a pump and move water from a nearby spring to a water trough centrally located amongst the cross fenced fields. Pumping water to the animals everyday meant a person from Lorne's operation had to make the 25-mile roundtrip to the pasture on a daily basis. The associated fuel, wear and tear on the pick-up truck and pump rental were all additional costs that are not anticipated in future years. The gross product and expenses incurred on Granrude's in 2002 are listed in **Table 5**.

| Cultivated Acres: 370 | | |
|---|------------------|----------------|
| Production | \$ Total | \$/Acre |
| Grazing 165 cow/calf pairs ~ 134 days @ \$1/day | 22,110.00 | |
| Grazing 8 bulls ~ 65 days @ \$1.50/day | 780.00 | |
| 90 hay bales ~ 1800 lbs/bale @ \$90/bale | 8,100.00 | |
| Total Gross Product | 30,990.00 | 83.76 |
| Expenses | | |
| Supplemental livestock mineral | 1,400.00 | 3.78 |
| Fuel/wear/tear on truck checking pasture | 2,130.00 | 5.76 |
| Pumping water to dugout/Pump rental | 600.00 | 1.62 |
| Fence improvements/repairs/add 2 paddocks | 250.00 | 0.68 |
| Land rent | 11,100.00 | 30.00 |
| Pumping water/checking cows (210hrs @ \$10/hr) | 2,100.00 | 5.68 |
| Costs of haying 65 acres | | |
| Cutting hay @ \$6/acre | 390.00 | |
| Baling ~90 bales @ \$8/bale | 720.00 | |
| Hauling to yard ~90 bales @ \$4/bale | 360.00 | |
| Total Expenses | 19,050.00 | 51.49 |
| Return | 11,940.00 | 32.27 |

Dahl's West 2002

In 2002 Dahl's West was seeded to CPS Wheat (Crystal), at a rate of 1.5 bu./acre into flax stubble, after a pre-seed burn off. Fifty pounds of 82:0:0 and 50 pounds of 11:55:0:0 were applied at the time of seeding. Assert & Bucril M were sprayed on the crop to control the wild oat population. Lorne's crop insurance coverage of 80% came in handy when the wheat crop was written off in late July due to severe drought. The crop insurance payout amounted to \$135/acre.

In early August the "skies opened up" and an abundance of moisture allowed for a substantial "second growth." The re-growth was swathed in late September and was to be baled as "greenfeed," however an abundance of October moisture prevented this from happening. Instead, these swaths were baled in the spring of 2003. The spring baling amounted to approximately 1.25 bales/acre. This feed is valued at \$30/bale "laid in the yard."

The crop insurance payout of \$135/acre coupled with a \$37.50/acre gross return from the spring baling amounts to the highest gross return/acre Dahl's West has experienced in this 3-year study. The gross product and expenses incurred on Dahl's West in 2002 are listed in **Table 6**.

| Cultivated Acres: 230 | | |
|----------------------------|------------------|----------------|
| Production | \$ Total | \$/Acre |
| Crop insurance | 31,050.00 | 135.00 |
| Crop in swath | 8,625.00 | 37.50 |
| Total Gross Product | 39,675.00 | 172.50 |
| Expenses | | |
| Total seeding | 4,830.00 | 21.00 |
| Total fertilizer | 4,701.20 | 20.44 |
| Pre-Harvest Burn off | 2,875.00 | 12.50 |
| Assert/Bucril M | 4,600.00 | 20.00 |
| Swathing | 1,840.00 | 8.00 |
| Land rent | 6,900.00 | 30.00 |
| Total baling | 2,300.00 | 10.00 |
| Crop insurance premium | 874.00 | 3.80 |
| Hauling bales to yard | 1,150.00 | 5.00 |
| Total Expenses | 30,070.20 | 130.74 |
| Return | 9,604.80 | 41.76 |

3 Year Summary

Dahl's West had an average return of \$25/acre during the last 3 years of production. As far as Granrude's is concerned, the value of the grazing days sold to the cowherd, 92 acres of canola harvested and 190 bales of hay produced have equaled both the variable and overhead costs incurred while converting this land from annual cropping to a perennial forage pasture. The 3-years of expenses and gross product incurred on both Dahl's West and Granrude's are listed in **Table 7**.

If Granrude's seed, fencing and dugout costs had been amortized over their expected lifetime the returns would obviously look much better than they do in Table 7. These

costs will not be incurred again for several years given the forage stand likely has 5 years of production before it is "worked-up" and the water and fencing infrastructure will be around for much longer than that. The surprising find in this analysis was that the outputs produced by Granrude's in the first 3 years of this transition, were nearly enough to cover all of the seed and infrastructure costs incurred when converting from grain to grass.

Stay tuned for future updates as Lorne and the WBDC plan on recording the returns and expenses from this land base in coming years.

| Table 7: 3 Year Average Return | | | |
|---------------------------------------|----------------|----------------------------|----------------|
| Granrude's 2000-02 | | Dahl's West 2000-02 | |
| Gross Product | \$/Acre | Gross Product | \$/Acre |
| Year 1 | 97.72 | Year 1 | 166.32 |
| Year 2 | 75.62 | Year 2 | 136.08 |
| Year 3 | 83.76 | Year 3 | 172.5 |
| 3 year average | 85.7 | 3 year average | 158.3 |
| Expenses | | Expenses | |
| Year 1 | 149.9 | Year 1 | 140.08 |
| Year 2 | 57.71 | Year 2 | 129.44 |
| Year 3 | 51.49 | Year 3 | 130.74 |
| 3 year average | 86.37 | 3 year average | 133.42 |
| Return | | Return | |
| Year 1 | -52.19 | Year 1 | 26.24 |
| Year 2 | 17.91 | Year 2 | 6.64 |
| Year 3 | 32.27 | Year 3 | 41.76 |
| 3 year average | -0.67 | 3 year average | 24.88 |

