



Case Study - SK-1b vs. RU-450-0

Farm Descriptions

SK-1b is a cow-calf and yearling grasser operation located in the Boreal Transition ecoregion of Saskatchewan, Canada. This farm keeps Angus/Hereford cross animals, and maintains a beef cow herd of 350 head. The cow-calf enterprise is located on 3,083 ac with predominantly black soils. Mean annual temperature is 1°C, and mean annual precipitation is 500mm.

RU-450-0 is a cow-calf operation located in the Central Chernozem Region, Russia. A beef cow herd of 458 head maintains this herd of Simmental animals. This farm is situated on 494 ac with peat moss and fen soils. Mean annual temperature is 6°C. Mean annual precipitation is 498mm, with dry summers.



Production System and Physical Performance Indicators

Similarities

Comparison of **SK-1b** and **RU-450-0** was chosen as these farms maintain medium-large beef cow herds, under similar climatic conditions, and both purchasing 100% of feed. Select performance characteristics are also similar. **SK-1b** also runs a yearling grasser enterprise, allowing interesting comparison of farm profitability.

Cow Performance and Weaning

SK-1b has heavier mature cows (1,200 lb) than **RU-450-0** (1,058 lb). **SK-1b** weans calves approximately two weeks older, and at a considerably larger weight (487 lb) than **RU-450-0** (364 lb). The cow herd replacement rate is the same on both farms (17-17.5%). Calf death loss much higher on **RU-450-0** (10.0%), compared to **SK-1b** (2.9%), presumably due to predation. Despite this, both farms wean a similar number of calves per 100 cows (85 and 83 calves on **SK-1b** and **RU-450-0**, respectively).

Cattle Sales and Prices

SK-1b sells animals as yearlings, at 862-870 lb. **RU-450-0** sells animals at weaning, therefore at a smaller 364 lb. For more accurate comparison, price per head at weaning is reported. Price per head for weaners sold is over two times higher on **SK-1b**, at \$1,054/head, than on **RU-450-0**, at \$455/head. This is likely due to differences in weaning weight and cattle prices on a per-pound basis.

Feed

While the two farms are located in similar climatic regions, both farms purchase 100% of supplemental feed. All land is in pasture on both farms. **SK-1b** purchases hay and mineral, while **RU-450-0** purchases concentrate and mineral. **SK-1b** feeds cows on pasture in winter, whereas cows on **RU-450-0** are overwintered in a winter barn.

	SK-1b	RU-450-0
Beef cows (hd)	350	458
Breeds	Angus Hereford cross	Simmental
Mature cow weight (lb)	1,200	1,058
Weaning age (d)	195	180
Weaning weight (lb)	487	364
200 day adjusted weaning weight (lb)	499	404
Weaning weight as % mature cow weight	41	34
Price per head for weaners sold (\$/hd)	1,054	455
Calf death loss	2.9%	10.0%
Calves weaned per 100 cows (hd)	85	83
Replacement rate (%)	17.5%	17.0%
Annual sales (hd)	231	287
Sale weight (lb)	862-870 (yearling)	364 (weaning)
Feed purchased (% as-is)	100%	100%
Income sources	Cow-calf, retained ownership	Cow-calf

Cow-calf Enterprise

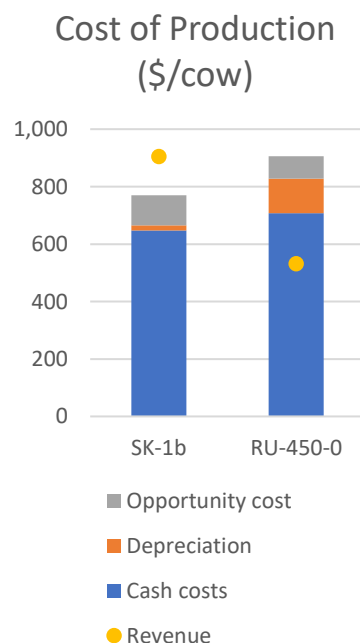
Cost and Profit

For comparison of costs and profits, a 5-year average (2016-2020) is used. **Total production costs** of the cow-calf enterprise (including cash cost, depreciation, and opportunity cost) on **SK-1b** averaged \$648/cow, 9% smaller than total production costs of \$708/cow on **RU-450-0**.

Cash costs include purchased feed, costs of feed production including seed and fertilizer, land rent, wages, machine and building maintenance, interest on liabilities, veterinary and medicine costs, etc. These costs make up the majority of total costs on both farms, accounting for 84% of total costs on **SK-1b**, and 78% of total costs on **RU-450-0**.

Depreciation on machinery, buildings, etc. accounted for only 2% of total farm costs on **SK-1b**, and an average of 13% of total farm costs on **RU-450-0**.

Total costs of the cow-calf enterprise		
Costs (\$/cow)	SK-1b	RU-450-0
Cash costs	648	708
Depreciation	17	120
Opportunity cost	105	79
<i>Land</i>	44	0
<i>Labour</i>	58	0
<i>Capital</i>	4	79
Total cost	770	906
Revenue	905	531
Short-term profit	257	-177
Medium-term profit	240	-297
Long-term profit	135	-375



Opportunity costs are calculated for unpaid family labour, owned land, and capital. Opportunity costs account for 14% of total costs on **SK-1b**, and 8% of total costs on **RU-450-0**, the smallest share of total costs on this farm. The largest component of opportunity cost on **SK-1b** (55%) is opportunity cost of labour, associated with the reliance on unpaid family labour on this farm. On **RU-450-0**, opportunity costs are entirely associated with opportunity cost of capital.

Revenue from the cow-calf enterprise, including weaned calf and cull sales, was \$905/cow on **SK-1b**, and \$531/cow on **RU-450-0**. Revenue on **SK-1b** is 70% higher per-cow than revenue on **RU-450-0**.

SK-1b maintains a profitable cow-calf enterprise in the short-, medium-, and long-terms. On this farm, **short-term profits** (revenue – cash costs) averaged \$257/cow, and **medium-term profits** (revenue – cash and depreciation costs) averaged \$240/cow. Average **long-term profits** (revenue – cash, depreciation, and opportunity costs) on **SK-1b** were \$135/cow. In contrast, **RU-450-0** was unable to cover cow-calf costs in the short-, medium-, or long-terms. Per-cow short-term profits averaged -\$177/cow, and medium-term profits -\$297/cow. In the long-term, **RU-450-0** had an average profit of -\$375/cow.

Cost Structure

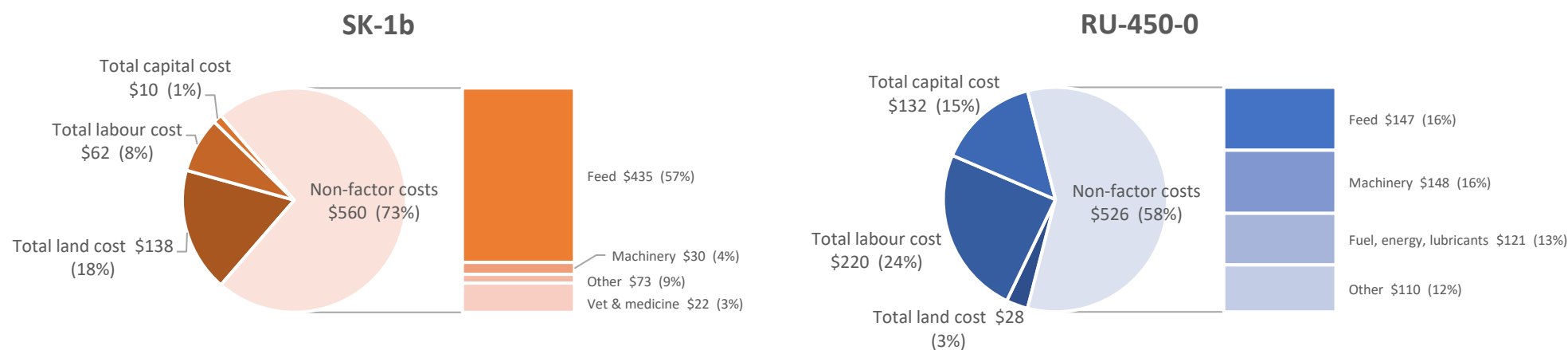
Total costs can be broken down as land, labour, capital, and non-factor costs. **SK-1b** has higher per-cow total land and non-factor costs, while total labour and capital costs are higher on **RU-450-0**. The composition of these, as a percentage of total farm costs, also differs between the two farms.

Land costs are almost 5 times higher per-cow on **SK-1b**, accounting for 18% of total costs, as compared to **RU-450-0**, where these account for only 3% of total costs. While **SK-1b** pays considerably less in land rent, at \$16/ac for both rented and calculated rent for owned land, where **RU-450-0** pays \$26/ac (all rented), **SK-1b** maintains a significantly larger land base (3,083 ac) than **RU-450-0** (484 ac).

Labour costs account for 8% of total costs on **SK-1b**, and 24% of total costs on **RU-450-0**. This difference arises from differences in total labour hours. **SK-1b** logs 896 hrs annually, as compared to 20,064 hrs on **RU-450-0**. This overcomes the difference in labour costs between the two farms. Average wages (between paid and wages calculated for unpaid family labour) are \$20.57/hr on **SK-1b**. In contrast, **RU-450-0** pays only \$5.02/hr in paid wages. **SK-1b** relies primarily on unpaid family labour (91% of total labour hours), whereas **RU-450-0** hires all labour.

Capital costs account for only 1% of total costs on **SK-1b**. In contrast, capital costs account for 14% of total costs on **RU-450-0**, the majority (59%) as owned capital, and the remained (41%) as interest on liabilities.

Costs (\$/cow)	SK-1b	RU-450-0
Total land cost	138	28
Total labour cost	62	220
Total capital cost	10	132
Non-factor costs	560	526
Animal purchases	13	39
Feed	435	147
Machinery	30	148
Fuel, energy, lubricants	11	121
Buildings	14	7
Vet & medicine	22	13
Insurance, taxes	19	33
Other inputs	18	18
Total costs	770	906



Non-factor costs are the largest component of total costs on both farms, accounting for 73% and 58% of total costs on **SK-1b** and **RU-450-0**, respectively. On **SK-1b**, **feed costs** account for 78% of non-factor costs, and 57% of total costs. As this farm purchases all feed, 98% of feed costs are associated with feed purchases, and the remaining 2% with land improvement. Feed costs are also significant on **RU-450-0**, accounting for 28% of non-factor and 16% of total costs. These, too, are associated entirely with purchased feed. Other significant non-factor costs on **RU-450-0** are **machinery** costs (28% of non-factor and 16% of total costs), primarily as depreciation, and **fuel, energy, and lubricant** costs, the majority as diesel for vehicles, gas, and oil.

Whole Farm

Other Farm Enterprises

In addition to the cow-calf enterprise, **SK-1b** retains ownership of calves, running a yearling grasser enterprise. There are no additional farm enterprises on **RU-450-0**.

Cost and Profit

Total farm revenue on SK-1b averaged \$657,699 over the 5-year period. Just over half (52%) of total revenue is market revenue from the retained ownership enterprise. The cow-calf enterprise accounts for 48% of total revenue on this farm. In contrast, the cow-calf enterprise accounts for 85% of total revenue on **RU-450-0**, with the remainder of farm revenue from government payments. Average whole-farm revenue for **RU-450-0** was \$243,220.

Total farm expenses averaged \$596,352 on **SK-1b**, and \$401,149 on **RU-450-0**. The addition of the retained ownership enterprise on SK-1a resulted in total expenses 1.5 times that of **RU-450-0**, however total farm revenue is 2.7 times greater.

On **SK-1b**, the largest proportion of total farm expenses is from the retained ownership enterprise (50%), followed by the cow-calf enterprise (28%), wages, rent, and interest (13%), fixed costs (7%), and depreciation (2%). On **RU-450-0**, the largest expenses incurred were for wages, rent, and interest (40% of total farm expenses). The cow-calf enterprise accounts for a similar proportion of total expenses as on **SK-1b**, at 31% of total expenses.

Whole-farm cost and profit		
Costs (\$)	SK-1b	RU-450-0
Revenue		
Market revenue	660,759	206,545
Cow-calf	316,749	206,545
Retained ownership	344,010	0
Other farm revenue	1,600	0
Government payments	0	36,675
Change in inventory	-4,660	0
Total farm revenue	657,699	243,220
Expenses		
Depreciation	12,452	54,876
Fixed costs	41,430	63,245
Wages, rent, interest	77,429	160,262
Cow-calf	167,842	122,766
Retained ownership	298,200	0
Total farm costs	597,352	401,149
Profits		
Net income	60,347	-157,929
Net cash farm income	77,459	-103,053

Along with a successful cow-calf enterprise, **SK-1b** is able to maintain whole-farm profitability over the 5-year period. **Net income** for **SK-1b** averaged \$60,347^a, and **net cash farm income** averaged \$77,459^b. In contrast, **RU-450-0** remains unprofitable at the whole-farm level, even with the additional government subsidy included in whole-farm revenue. Over the 5-year period, net income averaged -\$157,929^a on **RU-450-0**, and net cash farm income averaged -\$103,053^b.

^aThis is whole farm profitability, calculated as Market returns (+ coupled payments) (+ decoupled payments) – whole-farm costs +/- changes in inventory +/- capital gains/losses. Whole-farm costs include Direct costs enterprises, overhead costs, paid labour, paid rents, paid interest, depreciation

^bNet cash farm income = Whole farm profitability + depreciation + changes in inventory + capital gains/losses.