



Case Study - MB-2 vs. US-210-0

Farm Descriptions

MB-2 is a cow-calf and pre-conditioning operation in Manitoba, Canada, located in the Interlake Plain ecoregion. This farm has 225 head of beef cows, and keeps purebred as well as commercial animals. The cow-calf enterprise is situated on 1,394 ac with chernozemic, brunisolic, and luvisolic soils. The climate is semi-arid. Mean annual temperature is 2°C, and mean annual precipitation is 500-525mm, with May-September the period of highest precipitation.

US-210-0 is a cow-calf and backgrounding operation in New Mexico, USA. This farm has a beef cow herd of 220 head, and keeps British/Continental cross animals. The cow-calf operation is located on 12,338 ac with sandy loam soils. The climate is dry and semi-arid. Mean annual temperature is 13°C, and mean annual precipitation is 390mm, with the majority falling between May-September. Additional farm revenue is generated from lease hunting.



Production System and Physical Performance Indicators

Similarities

Comparison of **MB-2** and **US-210-0** was chosen for similar herd size, retained ownership, and select performance characteristics. While the farms experience similar climatic conditions and precipitation patterns, mean annual temperature is considerably higher on **US-210-0**.

Cow Performance and Weaning

Mature cow weight is similar on both farms, at 1,272 lb on **MB-2** and 1,250 lb on **US-210-0**. Calves are weaned at a similar age, though are considerably heavier on **US-210-0** (530 lb) than **MB-2** (487 lb). This is reflected in the 200d adjusted weaning weight, and weaning weight as a % of mature cow weight.

Calf death loss is similarly low (1.0% on **MB-1** and 2.0% on **US-210-0**), and calves weaned per 100 cows is comparable (92 and 93 calves on **MB-2** and **US-210-0**, respectively).

Cattle Sales and Prices

MB-2 and **US-210-0** receive similar prices for weaned calves, at \$1,272/head and \$1,262/head, respectively. This is in spite of differences in weaning weights. Both farms then retain animals for further feeding. **MB-2** retains calves for 180d pre-conditioning, and sells 160 head of backgrounded animals annually. **US-210-0** retains weaned calves for backgrounding, and sells an average 149 head per year.

Feeding

On **MB-2**, winter diets for cows include corn silage, hay, straw, pellets, grain, salt and mineral, 11% of provided feedstuffs are purchased. Cows are fed in confinement over winter. On **US-210-0**, differences in local weather allow cows to be kept outdoors year-round. All land on **US-210-0** is in pasture, with some supplemental feed purchased.

	MB-2	US-210-0
Beef cows (hd)	225	210
Breeds	Purebred Charolais, Angus, Simmental, Commercial	British/Continental crosses
Mature cow weight (lb)	1,273	1,250
Weaning age (d)	206	210
Weaning weight (lb)	487	530
200 day adjusted weaning weight (lb)	473	505
Weaning weight as % mature cow weight	38	42
Price per head for weaners sold (\$/hd)	1,272	1,262
Calf death loss	1.0%	2.0%
Calves weaned per 100 cows (hd)	92	93
Replacement rate (%)	8.0%	19%
Annual sales (hd)	160	149
Income sources	Cow-calf, retained ownership	Cow-calf, lease hunting

Cow-calf Enterprise

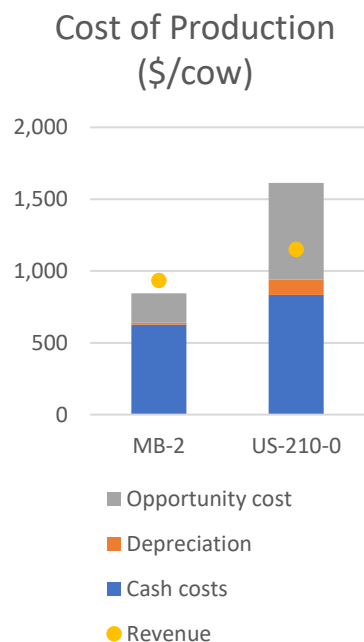
Cost and Profit

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 **MB-2** averaged \$824/cow. On **US-210-0**, average production costs were \$1,613/cow, almost twice the total costs incurred on **MB-2**.

Cash costs include purchased feed, cost of feed production including seed and fertilizer, land rent, wages, machine and building maintenance, interest on liabilities, veterinary and medicine costs, etc. These costs account for 75% of costs on **MB-2**, and 52% of costs on **US-210-0**.

Depreciation on machinery, buildings, etc., account for only 1% of total costs on **MB-2**, and 7% of costs on **US-210-0**. This is the smallest share of total costs.

Total costs of the cow-calf enterprise		
Costs (\$/cow)	MB-2	US-210-0
Cash costs	614	833
Depreciation	12	107
Opportunity cost	198	674
<i>Land</i>	38	360
<i>Labour</i>	160	240
<i>Capital</i>	0	74
Total cost	824	1,613
Revenue	940	1,149
Short-term profit	326	316
Medium-term profit	314	210
Long-term profit	116	-464



Opportunity costs are calculated for unpaid family labour, owned land, and capital. These costs account for 24% of costs on **MB-2**, and 42% of costs on **US-210-0**. On **MB-2**, opportunity cost of labour is the largest share (81%) of opportunity costs. On this farm, all labour hours are unpaid family labour. On **US-210-0**, opportunity cost of land accounts for more than half (53%) of opportunity costs, which represents potential revenue gained from alternative uses of owned land, such as renting land to neighbours.

Revenue from the cow-calf enterprise, including weaned calf and cull sales, was an average \$940/cow. Cow-calf revenue is 22% larger on **US-210-0**, at an average of \$1,149/cow over the 5-year period.

Both **MB-2** and **US-210-0** are able to maintain profitability of the cow-calf enterprise in both the short- and medium-terms. **Short-term profits** (revenue – cash costs) averaged \$326/cow and \$316/cow for **MB-2** and **US-210-0**, respectively. **Medium-term profits** (revenue – cash and depreciation costs) averaged \$214/cow on **MB-2**, and \$210/cow on **US-210-0**. Only **MB-2** is profitable in the long-term, with average **long-term profits** (revenue – cash, depreciation, and opportunity costs) of \$116/cow. In contrast, **US-210-0** saw an average long-term profit of -\$464/cow over the 5-year period.

Cost Structure

Total costs can be broken down as land, labour, capital, and non-factor costs. As with total production costs, total land, labour, capital, and non-factor costs on a per-cow basis are all higher on **US-210-0**. There is, however, variation in cost structure between the two farms, wherein these costs are reported as a percentage of total costs.

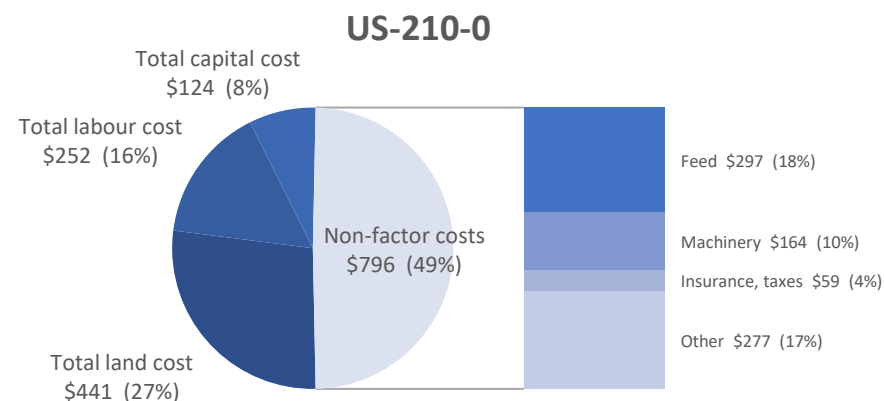
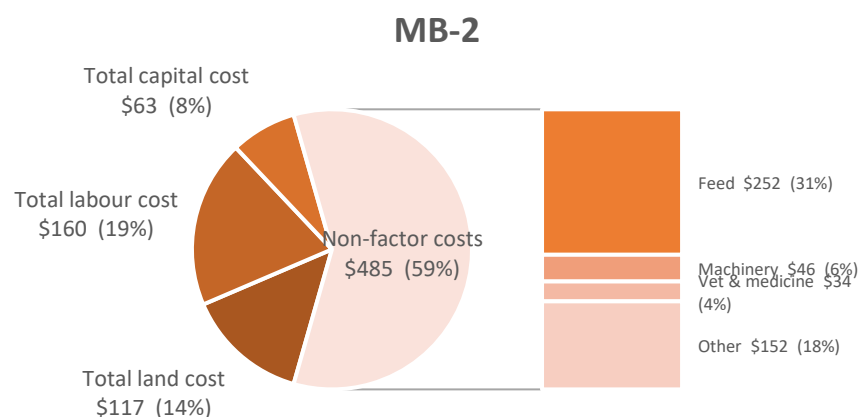
Land costs account for 14% of total costs on **MB-2**, and 27% of costs on **US-210-0**. **MB-2** pays significantly higher per-acre land costs. On this farm, rents paid are \$14/ac, and rents calculated for owned land are \$49/ac. In contrast, land rents are \$8/ac on **US-210-0** (both rented and calculated for owned land). Despite this, land costs are considerably higher on **US-210-0** due to total land acres, as the cow-calf enterprise on this farm has almost nine times the land base (12,338 ac) as that on **MB-2** (1,390 ac).

Labour costs account for 19% of total costs on **MB-2**, and 16% of total costs on **US-210-0**. Total labour hours on **MB-2** are 1,821 hr, with 100% of hours being unpaid family labour.

On **US-210-0**, total labour hours are 2,786, almost 50% more than on **MB-2**. **US-210-0** uses both hired and unpaid family labour; 95% of total labour hours are from unpaid family labour. Labour prices on the two farms are comparable, at \$19.72/hr on **MB-2** and \$19.92/hr on **US-210-0**.

Capital costs account for 8% of total costs on both **MB-2** and **US-210-0**, the smallest share of total costs. On **MB-2**, all capital costs incurred are interest on liabilities. On **US-210-0**, more than half (60%) of capital costs are own capital, with the remainder as interest on liabilities (40%).

Costs (\$/cow)	MB-2	US-210-0
Total land cost	117	441
Total labour cost	160	252
Total capital cost	63	124
Non-factor costs	485	796
Animal purchases	21	88
Feed	252	297
Machinery	46	164
Fuel, energy, lubricants	20	24
Buildings	18	5
Vet & medicine	34	34
Insurance, taxes	19	59
Other inputs	75	126
Total costs	824	1,613



Non-factor costs are the largest component of total costs on both farms, accounting for 59% and 49% of total costs on **MB-2** and **US-210-0**, respectively. On both farms, **feed costs** are the most significant non-factor cost. These account for 52% of non-factor and 30% of total costs on **MB-2**, and for 37% of non-factor and 18% of total costs on **US-210-0**. The majority of feed costs (87%) on **MB-2** are for purchased feed, with the remainder for inputs for feed production, such as seed and fertilizer, and land improvement. On **US-210-0**, feed costs are entirely for purchased feed. **Machinery** costs are also significant on both farms, accounting for 10% of non-factor costs on **MB-2** and 21% on **US-210-0**. On **MB-2**, a large share of machinery costs is associated with contract labour, whereas on **US-210-0** these costs are mostly as depreciation.

Whole Farm

Other Farm Enterprises

Both **MB-2** and **US-210-0** retain ownership of weaned calves. However, the pre-conditioning enterprise is reported separately on **MB-2**, whereas backgrounded calves are included as part of the cow-calf enterprise on **US-210-0**. **US-210-0** does, however, generate additional revenue from other farm activities.

Cost and Profit

Total farm revenue on **MB-2** averaged \$427,562 over the 5-year period. Of total-farm revenue, 49% is attributed to market revenue from the cow-calf enterprise, with the remainder from the pre-conditioning enterprise. On **US-210-0**, total farm revenue averaged \$274,900, of which 93% is market revenue from the cow-calf enterprise (included backgrounded animals). The remainder of total farm revenue is generated by other farm activities.

Total farm expenses on **MB-2** averaged \$376,455 over the 5-year period. Half of total farm expenses were incurred by the retained ownership enterprise, with the cow-calf enterprise accounting for 20% of total expenses. In contrast, cow-calf enterprise accounted for 48% of total expenses on **US-210-0**. On this farm, total farm expenses averaged \$212,748 over the 5-year period.

Both **MB-2** and **US-210-0** maintained whole-farm profitability over the 5-year period. This is in contrast to a cow-calf enterprise that was unprofitable in the long-term on **US-210-0**. At whole-farm level, including the cow-calf and pre-conditioning enterprises, **net income** for **MB-2**

Whole-farm cost and profit		
Costs (\$)	MB-2	US-210-0
Revenue		
Market revenue	430,509	256,719
Cow-calf	211,545	256,719
Retained ownership	218,963	0
Cash crop	0	0
Other farm revenue	0	18,181
Government payments	0	0
Change in inventory	-2,947	0
Total farm revenue	427,562	274,900
Expenses		
Depreciation	5,333	25,918
Fixed costs	34,757	52,710
Wages, rent, interest	47,482	32,217
Cow-calf	76,043	101,903
Retained ownership	191,886	0
Cash crop	20,954	0
Total farm costs	376,455	212,748
Profits		
Net income	51,107	62,152
Net cash farm income	59,387	87,822

averaged \$51,107^a, and **net cash farm income** averaged \$59,387^b. On **US-210-0**, net income averaged \$62,152^a, and net cash farm income averaged \$87,822^b over the five-year period.

^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.