



Case Study - MT-2 vs. CH-20-0

Farm Descriptions

MT-2 is a cow-calf operation located in the Uplands region of New Brunswick, Canada. This farm has a beef cow herd of 35 head, and has both purebred (Charolais, Simmental, and Galloway) and commercial animals. The cow-calf enterprise is located on 178 ac, with podzolic soils and a moist continental climate. Mean annual temperature is 5°C, and mean annual precipitation is 1,250mm. This farm also does some farm-gate sales of boxed beef (cull cows).

CH-20-0 is a cow-calf operation located in the Alpine region of Switzerland. Twenty head of beef cows maintain the herd of Blonde d'Aquitaine / Braunvieh cross animals. The cow-calf enterprise is situated on 153 ac of land with predominantly clay loam soils. Mean annual temperature is 5°C, and mean annual precipitation is 1,254mm, with even distribution of precipitation across all seasons. There is also meat turkey production on this farm.



Production System and Physical Performance Indicators

Similarities

Comparison of **MT-2** and **CH-20-0** was chosen as these are two small-size herds in areas with high cost of production. These farms also have comparable mean annual temperature and precipitation, which is important to feed and forage production, particularly when both farms rely on homegrown feeds.

Cow Performance and Weaning

Based on breed differences, mature cow weight is higher on **CH-20-0** (1,654 lb) than on **MT-2** (1,540 lb). Weaning weights are also considerably higher on **CH-20-0**, as calves are weaned 7.5 weeks older than calves on **MT-2** and are marketed as slaughter weaners (baby beef) rather than sent to finish. A considerably higher 200-d adjusted weaning weight on **CH-20-0** shows breed differences. The two farms are comparable in calf death loss (5%), and calves weaned per 100 cows (91 and 90 on **MT-2** and **CH-20-0**, respectively). Replacement rate, however, is considerably higher on **CH-20-0** (20%) as compared to **MT-2** (7%).

Cattle Sales and Prices

Both farms sell weaned calves, however weaners from **MT-2** go to finish, whereas those on **CH-20-0** are sent to slaughter.

This is cause for the large weaning/sale weight on **CH-20-0** (981 lb), as compared to **MT-2** (599 lb). Due to these differences, price received per 100kg live weight is almost four times higher for weaners on **CH-20-0**, at \$620/cwt LW, compared to \$167/cwt LW on **MT-2**.

Feed

Both farms rely primarily on homegrown feed. Winter feeding on **MT-2** consists of bale grazing dry hay and haylage in confinement, with salt and mineral. **CH-20-0** feeds a grass hay/silage-based diet (78%) in a winter barn, with some access to grazing land (15%) and mineral supplement.

	MT-2	CH-20-0
Beef cows (hd)	35	20
Breeds	Purebred Charolais, Simmental, Galloway; Commercial	Blonde d'Aquitaine * Braunvieh
Mature cow weight (lb)	1,540	1,654
Weaning age (d)	217	270
Weaning weight (lb)	599	981
200 day adjusted weaning weight (lb)	552	727
Weaning weight as % mature cow weight	39	59
Calf death loss	5.0%	5.0%
Calves weaned per 100 cows (hd)	91	90
Replacement rate (%)	7.0%	20.0%
Sale weight (lb)	599	981
Sale price per 100 kg LW (\$/100kg)	369	1,392
Feed purchased (% as-is)	1%	7%
Income sources	Cow-calf, crop	Cow-calf

Cow-calf Enterprise

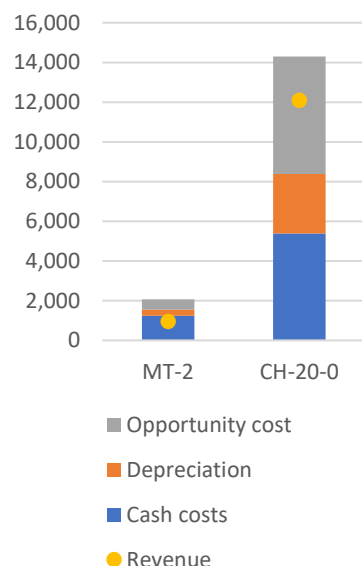
Cost and Profit

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 **MT-2** averaged \$2,070/cow. Total production costs on **CH-20-0** are almost seven times higher, at an average of \$14,303/cow.

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. Cash costs make up the majority of total costs on **MT-2**, at 60% of total costs. On **CH-20-0**, cash costs account for 38% of total costs.

Total costs of the cow-calf enterprise		
Costs (\$/cow)	MT-2	CH-20-0
Cash costs	1,248	5,391
Depreciation	296	2,989
Opportunity cost	527	5,924
Land	41	238
Labour	486	5,350
Capital	0	336
Total cost	2,070	14,303
Revenue	960	12,085
Short-term profit	-287	6,694
Medium-term profit	-583	3,706
Long-term profit	-1,109	-2,218

Cost of Production (\$/cow)



Opportunity costs are calculated for unpaid family labour, owned land, and capital. Opportunity costs account for 25% of total costs on **MT-2**, and account for the largest share of total costs, at 41%, on **CH-20-0**. On both farms, opportunity cost of labour is the most significant opportunity cost, at 92% and 90% of total costs on **MT-2** and **CH-20-0**, respectively. This amounts for 23% and 37% of *total* costs on **MT-2** and **CH-20-0**, respectively. These are associated with the reliance on unpaid family labour on these farms.

Revenue from the cow-calf enterprise, including weaned calf and cull sales, averaged \$960/cow on **MT-2**, and \$12,085/cow on **CH-20-0**. Where total cost on **CH-20-0** was almost seven times higher than that of **MT-2**, total revenue is approximately 12.5 times greater on **CH-20-0**. This results in stark differences in profitability of the cow-calf enterprise.

On **MT-2**, the cow-calf enterprise was unprofitable in all of the short-, medium-, and long-terms. Average **short-term profit** (revenue – cash costs) was -\$287/cow. Average **medium-term profit** (revenue – cash and depreciation costs) was -\$583/cow, and average **long-term profit** (revenue – cash, depreciation, and opportunity costs) was -\$1,109/cow. In contrast, **CH-20-0** was able to cover both cash and depreciation costs over the 5-year period. On this farm, short-term profits averaged \$6,694/cow, and medium-term profits \$3,307/cow. However, the cow-calf enterprise on **CH-20-0** is unprofitable in the long term, unable to cover average total costs over the 5-year period. Long-term profits averaged -\$2,218/cow.

Cost Structure

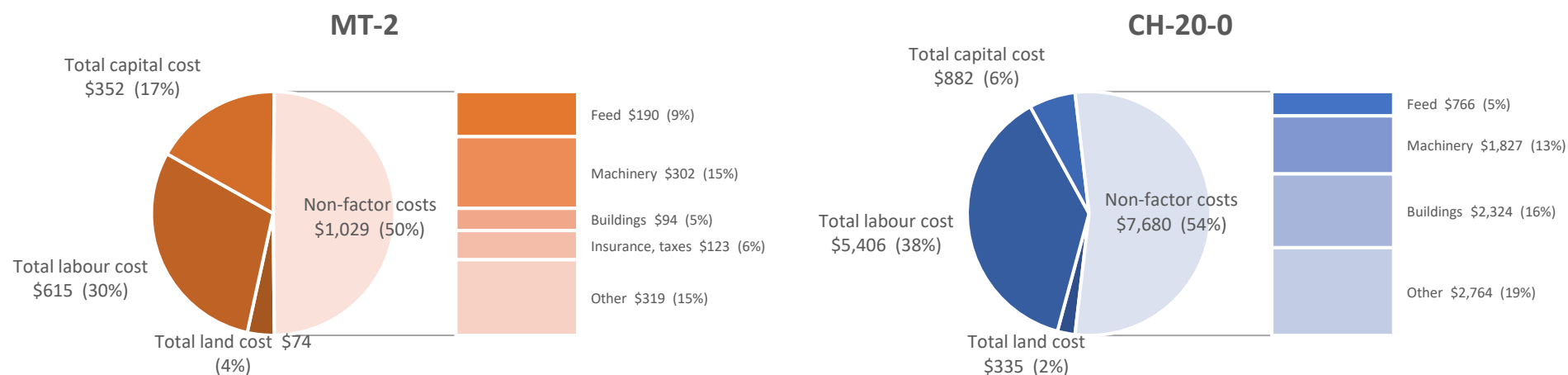
Total costs can be broken down as land, labour, capital, and non-factor costs. As with cost and revenue above, per-cow costs are significantly higher on **CH-20-0**, though as a percent of total costs, cost structure is similar between the two farms.

Land costs account for the smallest proportion of total costs on both farms, at only 4% of total cost on **MT-2**, and 2% of total costs on **CH-20-0**. As with other costs, land rents are significantly higher on **CH-20-0**. Rents paid for rented land are \$66/ac, and rents calculated for owned land are \$87/ac on **CH-20-0**. In contrast, **MT-2** pays \$12/ac for rented land, and rents calculated for owned land are \$18/ac.

Labour costs account for 30% of total costs on **MT-2**, and 38% of total costs on **CH-20-0**. **CH-20-0** puts in 3,929 total labour hours annually, three times that on **MT-2** (1,323 hrs). Both farms rely primarily on unpaid family labour, accounting for 77% and 86% of labour hours on **CH-20-0**. There is also significant difference in labour prices between the two farms. **MT-2** pays \$14.67/hr for paid labour and has a calculated wage of \$16.77/hr for unpaid family labour. In contrast, paid wages on **CH-20-0** are only \$1.98/hr, with calculated wages for unpaid family labour of \$31.83/hr.

Capital costs account for 17% of total costs on **MT-2**, and only 6% of total costs on **CH-20-0**. Interest on liabilities account for all capital costs on **MT-2**. Interest on liabilities also accounts for the majority (61%) of capital costs on **CH-20-0**.

Costs (\$/cow)	MT-2	CH-20-0
Total land cost	74	335
Total labour cost	615	5,406
Total capital cost	352	882
Non-factor costs	1,029	7,680
Animal purchases	36	483
Feed	190	766
Machinery	302	1,827
Fuel, energy, lubricants	91	425
Buildings	94	2,324
Vet & medicine	33	108
Insurance, taxes	123	371
Other inputs	159	1,377
Total costs	2,070	14,303



Non-factor costs are the largest component of total farm costs on both operations, accounting for 50% of total costs on **MT-2**, and 54% of total costs on **CH-20-0**. **Machinery costs** are the largest non-factor cost on **MT-2**, and the second largest on **CH-20-0**. On both farms, depreciation is the largest component of machinery costs, followed by maintenance. **Feed costs** are the second largest non-factor cost on **MT-2** (19% of non-factor and 9% of total costs). The largest proportion of feed costs on **MT-2** is associated with land improvement, followed by feed purchases, fertilizer, and seed costs. Feed costs make up a smaller proportion of costs on **CH-20-0**, accounting for 10% of non-factor costs, and only 5% of total costs. While **CH-20-0** purchases only 7% of feedstuffs, feed purchases account for 99% of feed costs on this farm. The most significant non-factor cost on **CH-20-0** (30% of non-factor and 16% of total costs) is that associated with **buildings**, such as the winter barn. This is primarily as depreciation, followed by maintenance. Both farms spend a similar, small (<6%) share of total costs on **animal purchases, fuel, veterinary and medical costs, insurance and taxes, and other inputs**.

Whole Farm

Other Farm Enterprises

On **MT-2**, boxed beef sales from cull cows are included in the cow-calf enterprise. However, this farm does gain additional income from sale of additional feed/forage crops. **CH-20-0** gains additional farm revenue from a meat turkey enterprise.

Cost and Profit

Total farm **revenue** on **MT-2** averaged \$40,303 over the 5-year period. Market revenue from the cow-calf enterprise accounted for 83% of total revenue, and additional crop sales 17% of total revenue. Average total farm revenue on **CH-20-0** was \$299,758, though a large percentage of this (45%) was from government payments. A similar portion comes from cow-calf market revenue (44%), and the remainder (12%) from the turkey enterprise.

Total farm expenses on **MT-2** averaged \$66,000. A large proportion of these expenses are attributed to wages, rent and interest (33%), and fixed costs (31%). The cow-calf enterprise only accounts for 9% of total expenses. On **CH-20-0**, the largest farm expense is depreciation, accounting for 40% of total expenses. Other considerable expenses on this farm are fixed costs (27% of total expenses), and the cow-calf enterprise (26% of total expenses).

Whole-farm cost and profit		
Costs (\$)	MT-2	CH-20-0
Revenue		
Market revenue	40,285	130,471
Cow-calf	33,613	130,471
Crop production	6,672	0
Other farm revenue	19	35,066
Government payments	0	134,221
Total farm revenue	40,303	299,758
Expenses		
Depreciation	12,411	75,833
Fixed costs	20,221	52,101
Wages, rent, interest	21,546	10,401
Cow-calf	6,013	50,393
Crop production	5,808	2,357
Total farm costs	66,000	191,084
Profits		
Net income	-25,697	108,674
Net cash farm income	-13,304	184,485

Just as the cow-calf enterprise was unprofitable over the 5-year term, average net profits on **MT-2** are negative. Over this period, average **net income** on **MT-2** was -\$25,697^a, and average **net farm cash income** -\$13,304^b. In contrast, with the profitable cow-calf enterprise and additional farm revenue from turkey production and government payments, net income on **CH-20-0** averaged \$108,674^a, and net farm cash income averaged \$184,485^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.