

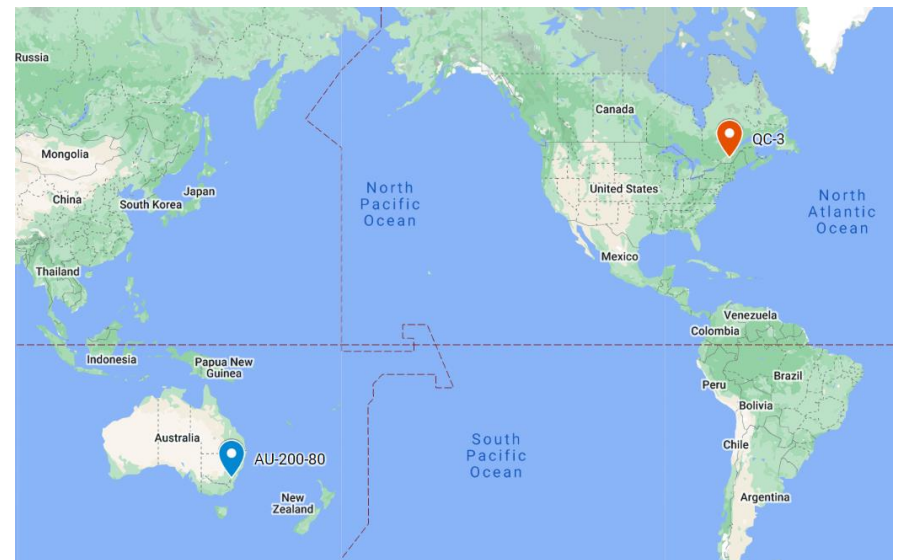


## Case Study - QC-1 vs. AU-200-80

### Farm Descriptions

**QC-1** is a cow-calf and backgrounding operation located in the St. Lawrence Lowlands of Quebec, Canada. The cow-calf enterprise, with 150 head of beef cows, is situated on 575 ac with predominantly medium loam soils. The area has a moist continental mid-latitude climate, with a mean annual temperature of 5°C and mean annual precipitation of 900mm.

**AU-200-80** is a cow-calf and finishing operation located in the Southern Tablelands, New South Wales, Australia. This farm keeps 180 head of beef cows, and operates the cow-calf enterprise on 494 ac. This area has predominantly clay loam soils, and a Mediterranean climate. Mean annual temperature is 13°C, and mean annual precipitation is 930mm, with a slight predominance for winter precipitation.



## Production System and Physical Performance Indicators

### Similarities

Comparison of **QC-1** and **AU-200-80** was chosen for similarities in farm enterprises, beef cow herd size, and feed purchases. With the reliance on home-grown feeds on both operations, the difference in climatic conditions provides an interesting comparison.

### Cow Performance and Weaning

**QC-1** has a slightly heavier mature cow weight (1,200 lb) compared to **AU-200-80** (1,177 lb). **QC-1** also weans calves 5 weeks older, and at a significantly higher weight (605 lb) than **AU-200-80** (495 lb). Thus, weaning weight as a percent of mature cow weight is a higher 50% on **QC-1**, as compared to 42% on **AU-200-80**.

**QC-1** weans 91 calves per 100 cows, and **AU-200-80** only 83. As **QC-1** has a higher calf death loss (4.1% vs. 2.0%), this suggests conception or pregnancy rates may be a concern on **AU-200-80**. The high replacement rate on **AU-200-80** (25.0%) may support this theory.

### Cattle Sales and Prices

Price per head for weaned animals sold is 69% higher on **QC-1**, at \$1,116/head, compared to \$662/head on **AU-200-80**, though the difference in weaned calf age/weight likely contributes to this.

**QC-1** sells 112 backgrounded animals annually, while **AU-200-80** sells 83 steers from the finishing operation. As **QC-1** backgrounds animals, sale weight is considerably less than on **AU-200-80**; **QC-1** sells retained animals at 760-810 lb, and **AU-200-80** feeds to finish at 1,010 lb.

### Feeding

Both farms purchase 2% of total feedstuffs. **QC-1** supplements beef cows with homegrown hay in winter, feeding in confinement with building access. Due to climatic differences, **AU-200-80** keeps cows on pasture all year, supplementing grazed forage (96%) with grass hay/silage (4%).

	QC-1	AU-200-80
Beef cows (hd)	150	180
Breeds	Mixed	British
Mature cow weight (lb)	1,300	1,177
Weaning age (d)	245	210
Weaning weight (lb)	605	493
200 day adjusted weaning weight (lb)	494	469
Weaning weight as % mature cow weight	50	42
Price per head for weaners (\$/hd)	1,116	662
Calf death loss	4.1%	2.0%
Calves weaned per 100 cows (hd)	91	83
Replacement rate (%)	14.3%	25.0%
Annual sales (hd)	112	82
Sale weight (lb)	760-810	1,010
Feed purchased (% as-is)	2%	2%
Income sources	Cow-calf, backgrounding	Cow-calf, finishing

## Cow-calf Enterprise

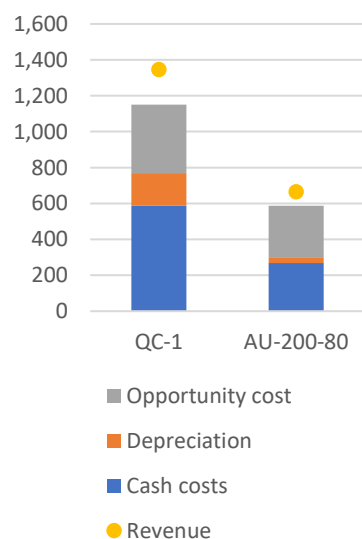
### Cost and Profit

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 **QC-1** averaged \$1,151/cow from 2016-2020. This is almost twice the total cost of the cow-calf enterprise on **AU-200-80**, at only \$588/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 account for approximately half of total production costs on both farms – 51% of total production costs on **QC-1**, and 45% of total production costs on **AU-200-80**.

Total costs of the cow-calf enterprise		
Costs (\$/cow)	QC-1	AU-200-80
Cash costs	587	268
Depreciation	182	29
Opportunity cost	382	291
<i>Land</i>	82	164
<i>Labour</i>	214	91
<i>Capital</i>	86	36
<b>Total cost</b>	<b>1,151</b>	<b>588</b>
<b>Revenue</b>	<b>1,346</b>	<b>665</b>
Short-term profit	760	397
Medium-term profit	577	368
Long-term profit	196	77

### Cost of Production (\$/cow)



**Opportunity costs** are calculated for unpaid family labour, owned land, and capital. On **QC-1**, the largest component is opportunity cost of labour, which accounts for 56% of opportunity costs and 19% of total costs. This is associated with a reliance on unpaid family labour on this farm. For **AU-200-80**, the opportunity cost of land accounts for 56% of opportunity costs, and 28% of total costs. As this farm owns all land, this cost is associated with potential revenue lost from other land uses, such as renting land to neighbours.

**Revenue** from the cow-calf enterprise, including weaned calf and cull sales and government payments, was \$1,346 on **QC-1**, and \$665 on **AU-200-80**. Revenue on **QC-1** is two times that of **AU-200-80**, which is congruent with the difference in total farm costs.

Both **QC-1** and **AU-200-80** were able to maintain positive average short-, medium-, and long-term profits over the 5-year period. **Short-term profits** (revenue – cash costs) averaged \$760/cow on **QC-1**, and \$397/cow on **AU-200-80**. **Medium-term profits** (revenue – cash and depreciation costs) averaged \$577/cow on **QC-1**, and \$368/cow on **AU-200-80**. **Long-term profits** (revenue – cash, depreciation, and opportunity costs) averaged \$196/cow and \$77/cow for **QC-1** and **AU-200-80**, respectively.

## Cost Structure

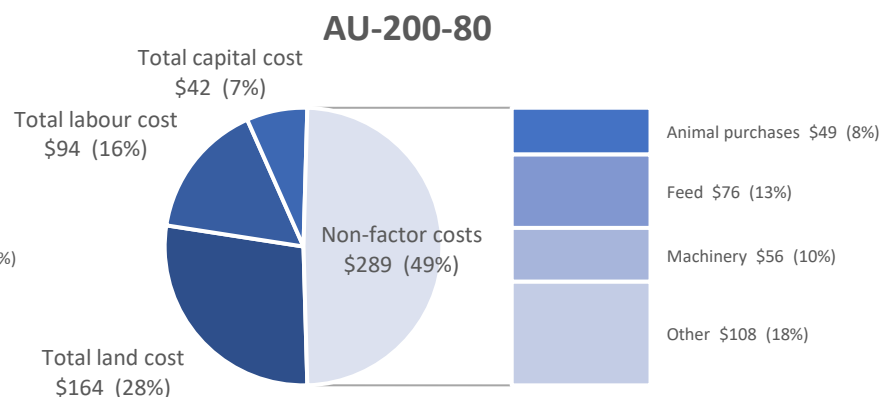
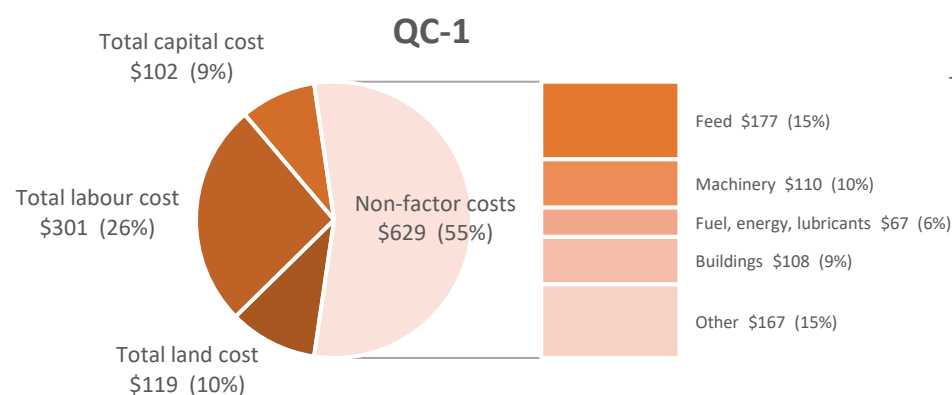
**Total costs** can be broken down as land, labour, capital, and non-factor costs. Per-cow, total labour, capital, and non-factor costs are higher on **QC-1**, and total land costs higher on **AU-200-80**. As a percentage of total cost, these components of total costs make for different cost structures between the two farms.

**Land costs** account for 10% of total farm costs on **QC-1**, and 28% of total costs on **AU-200-80**. While **AU-200-80** does not rent any land, rent calculated for owned land is considerably higher than either rental prices or rent calculated for owned land on **QC-1**. Rent calculated for land owned by **AU-200-80** is \$63/ac. In contrast, **QC-1** pays an average of \$32/ac between rented land and rent calculated for owned land. This is cause for higher per-cow land costs for **AU-200-80**, despite maintaining fewer acres (494 ac) than **QC-1** (575 ac).

**Labour costs** account for 26% of total costs on **QC-1**, and 16% of total costs on **AU-200-80**. Both farms rely primarily on unpaid family labour (75% and 99% of total labour hours on **QC-1** and **AU-200-80**, respectively). Total labour hours are significantly higher on **QC-1**, at 3,074 hrs annually, as compared to 1,152 hrs on **AU-200-80**. This is cause for the disparity in total labour costs, despite higher wages provided on **AU-200-80** (\$15.36-\$30.71/hr) compared to **QC-1** (\$13.97-\$16.97/hr).

**Capital costs** account for the smallest proportion of total costs, at 9% and 7% of total costs on **QC-1** and **AU-200-80**, respectively. On both farms, the majority of capital costs are own capital.

Costs (\$/cow)	QC-1	AU-200-80
Total land cost	119	164
Total labour cost	301	94
Total capital cost	102	42
Non-factor costs	629	289
Animal purchases	14	49
Feed	177	76
Machinery	110	56
Fuel, energy, lubricants	67	14
Buildings	108	28
Vet & medicine	28	6
Insurance, taxes	48	18
Other inputs	78	42
<b>Total costs</b>	<b>1,151</b>	<b>588</b>



**Non-factor costs** are the largest component of total farm costs on both operations, accounting for 55% of total costs on **QC-1**, and 49% of total costs on **AU-200-80**. On both farms, **feed costs** make up the largest share of non-factor costs. As both farms rely on primarily homegrown feed, these costs are predominantly associated with feed and forage production. On **QC-1**, feed costs account for 28% of non-factor costs, and 15% of total costs. In decreasing order, these include purchased feed fertilizer, other inputs, land improvement, and seed costs. On **AU-200-80**, feed costs account for 24% of non-factor costs and 13% of total costs, and are primarily as fertilizer, purchased feed, and seed costs. **Machinery** costs are also significant on both farms (10% of total farm costs on both farms), which may be expected when there is significant feed production on-farm. Other significant non-factor costs on **QC-1** are **buildings** (9% of total costs) and **fuel, energy, and lubricants** (6% of total costs). On **AU-200-80**, 8% of total farm costs are associated with **animal purchases**.

## Whole Farm

### Other Farm Enterprises

In addition to the cow-calf enterprise, **QC-1** also runs a retained ownership enterprise, where weaned calves are retained and backgrounded for 90d. **AU-200-80** also retains ownership, running an 82 head finishing operation.

### Cost and Profit

Total farm **revenue** on **QC-1** averaged \$369,794 over the 5-year period. Market revenue from the retained ownership enterprise was the largest contributor to total farm revenue (41%), followed closely by the cow-calf enterprise (40%). This farm also received sizeable government payments (18% of total revenue). On **AU-200-80**, over half of total farm revenue comes from the cow-calf enterprise (54%), followed by the retained ownership enterprise (48%). Due to a decrease in inventory over the 5-year period, these values do not sum to 100%.

On both operations, the retained ownership enterprise had the largest total **expenses**. These account for 44% and 45% of total farm expenses on **QC-1** and **AU-200-80**, respectively. Meanwhile, the cow-calf enterprise accounts for only 7% of total expenses on **QC-1**, and 14% of total expenses on **AU-200-80**. Other significant on-farm expenses for **QC-1** are depreciation (16% of total expenses), fixed costs (16%), and wages, rent, and interest (11%). On **AU-200-80**, fixed costs are also significant (19%) of total expenses, as well as costs associated with feed and forage crop production (13%).

Whole-farm cost and profit		
Costs (\$)	QC-1	AU-200-80
<b>Revenue</b>		
Market revenue	300,713	241,750
Cow-calf	147,631	127,323
Retained ownership	153,082	114,427
Other farm revenue	71	0
Government payments	65,787	0
Change in inventory	3,223	-9,884
<b>Total farm revenue</b>	<b>369,794</b>	<b>237,796</b>
<b>Expenses</b>		
Depreciation	56,266	11,012
Fixed costs	51,517	29,352
Wages, rent, interest	37,714	2,560
Cow-calf	23,564	20,385
Retained ownership	144,212	67,379
Crop production	17,674	20,267
<b>Total farm costs</b>	<b>330,947</b>	<b>150,955</b>
<b>Profits</b>		
Net income	38,847	86,842
Net cash farm income	91,818	101,807

As previously described, both farms operate a cow-calf enterprise that is viable in the short-, medium-, and long-term. In addition, both farms are able to maintain whole-farm profitability over the 5-year period. Average **net income** on **QC-1** was \$38,847<sup>a</sup>, and average net farm cash income \$91,818<sup>b</sup>. On **AU-200-80**, net income averaged \$86,842<sup>a</sup> over the five-year period, and net cash farm income averaged \$101,807<sup>b</sup>.

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<sup>a</sup>This 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

<sup>b</sup>Net cash farm income = Whole farm profitability + depreciation + changes in inventory + capital gains/losses.

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