

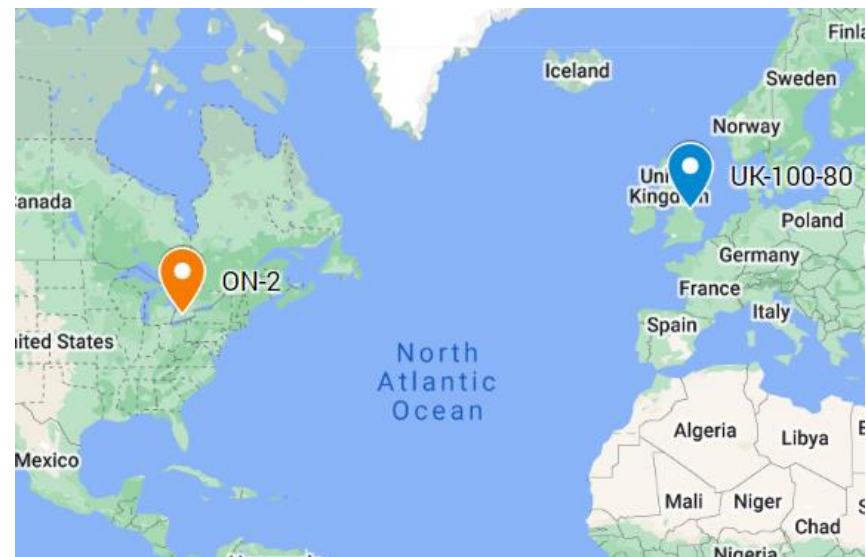


Case Study - ON-2 vs. UK-100-80

Farm Descriptions

ON-2 is a cow-calf operation located in the Lake Simcoe-Rideau region of Ontario, Canada. This operation keeps Angus animals, and maintains a beef cow herd of 100 head. The farm is situated on 384 ac, with sandy clay loam soils. Mean annual temperature is 6°C, and mean annual precipitation is 923mm, distributed across all seasons.

UK-100-80 is a cow-calf and finishing operation in Yorkshire, England. A beef cow herd of 100 head maintains this herd of Continental cross animals. The cow-calf operation is situated on 170 ac of clay loam soils, and experiences a mean annual temperature of 10°C, and mean annual precipitation of 600mm distributed across all seasons.



Production System and Physical Performance Indicators

Similarities

Comparison of **ON-2** and **UK-100-80** was chosen as these are two medium sized herds, with similar soil type and climatic conditions. This is important for feed/forage production, where these two farms rely primarily on homegrown feeds.

Cow Performance and Weaning

Cows on **ON-2** are heavier at maturity (1,200 lb) than on **UK-100-80** (1,158 lb). **ON-2** also weans calves approximately two weeks earlier, and lighter (557 lb) than on **UK-100-80** (606 lb), resulting in weaning weights as a lower percentage of mature cow weight (46%) than on **UK-100-80** (52%). However, 200 day adjusted weaning weights are similar between the two farms (571 lb and 578 lb on **ON-2** and **UK-100-80**, respectively). **ON-2** calves in two calving groups.

Calf death loss is considerably higher on **ON-2** (9.2%) than on **UK-100-80** (1.0%), which may be related to differences in predation between the two countries. Despite this, both farms wean a comparable number of calves per 100 cows. This is related to a slightly higher calving percentage on **ON-2** (92%) as compared to **UK-100-80** (88%). This may explain the higher replacement rate on **UK-100-80**.

Cattle Sales and Prices

ON-2 sells weaned calves to finish, whereas **ON-100-80** retains weaned calves to finish. As weaners, sale price is comparable, at \$1,097/hd on **ON-2**, and \$1,044 on **UK-100-80**, despite the lower weaning weights on **ON-2**.

Feed

Both farms rely primarily on homegrown feeds, with 16% and 0% of feedstuffs purchased on **ON-2** and **UK-100-80**, respectively. Winter diets for cows on **ON-2** are hay-based, supplemented with corn distiller's grains and mineral. On **UK-100-80**, wintering diets consist of grass hay/silage and mineral. Cows are confined only at calving on **ON-2**; cows on **UK-100-80** have access to a winter barn.

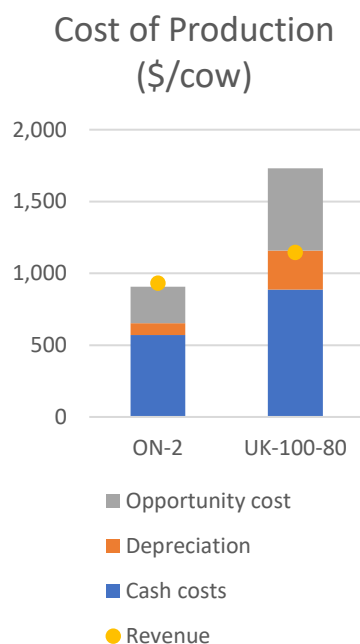
	ON-2	UK-100-80
Beef cows (hd)	160	100
Breeds	Angus	Continental
Mature cow weight (lb)	1,200	1,158
Weaning age (d)	195	210
Weaning weight (lb)	557	606
200 day adjusted weaning weight (lb)	571	578
Weaning weight as % mature cow weight	46%	52%
Calf death loss	9.2%	1.0%
Calves weaned per 100 cows (hd)	85	86
Replacement rate (%)	13.8%	19.0%
Price per head for weaners sold (\$/hd)	1,097	1,044
Sale weight (lb)	557	606
Feed purchased (% as-is)	16%	0%
Income sources	Cow-calf, crop	Cow-calf, retained ownership

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 **ON-2** averaged \$906/cow. On **UK-100-80**, total production costs averaged \$1,732/cow, 91% larger than on **ON-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. On a per-cow basis, cash costs are over 1.5 times greater on **UK-100-80**, at \$888/cow, as compared to \$570/cow on **ON-2**. However, cash costs account for a larger proportion of total costs on **ON-2** (63%) than on **UK-100-80** (51%).



Total costs of the cow-calf enterprise		
Costs (\$/cow)	ON-2	UK-100-80
Cash costs	570	888
Depreciation	83	271
Opportunity cost	254	573
<i>Land</i>	98	141
<i>Labour</i>	130	418
<i>Capital</i>	27	15
Total cost	906	1,732
Revenue	932	1,146
Short-term profit	362	258
Medium-term profit	280	-13
Long-term profit	26	-586

Opportunity costs are calculated for unpaid family labour, owned land, and capital. These costs account for a similar share of total costs on both farms, at 28% of total costs on **ON-2**, and 33% of total costs on **UK-100-80**. On both farms, the largest opportunity cost is that of labour (51% and 73% of opportunity costs on **ON-2** and **UK-100-80**, respectively). This is associated with a reliance on unpaid family labour on both farms. Opportunity costs of land are also significant on both farms (38% and 25% of opportunity costs on **ON-2** and **UK-100-80**, respectively). This represents the potential revenue gained from alternative uses of owned land, such as renting to neighbours.

Revenue from the cow-calf enterprise, including weaned calf and cull sales, was \$932/cow on **ON-2**. On **UK-100-80**, average cow-calf revenue over the 5-year period was \$1,146/cow. This is 23% larger than on **ON-2**, whereas total costs were 91% larger.

Both farms are able to cover short-term (cash costs). **Short-term profits** (revenue – cash costs) averaged \$362/cow on **ON-2**, and \$258/cow on **UK-100-80**. **ON-2** remains profitable in the medium-term, with average **medium-term profits** (revenue – cash and depreciation costs) of \$280/cow. This farm is also profitable in the long-term, with average **long-term profits** (revenue – cash, depreciation, and opportunity costs) of \$26/cow. In contrast, the cow-calf enterprise on **UK-100-80** is unprofitable in both the medium- and long-terms. Average medium-term profits are -\$13/cow, and long-term profits -\$586/cow.

Cost Structure

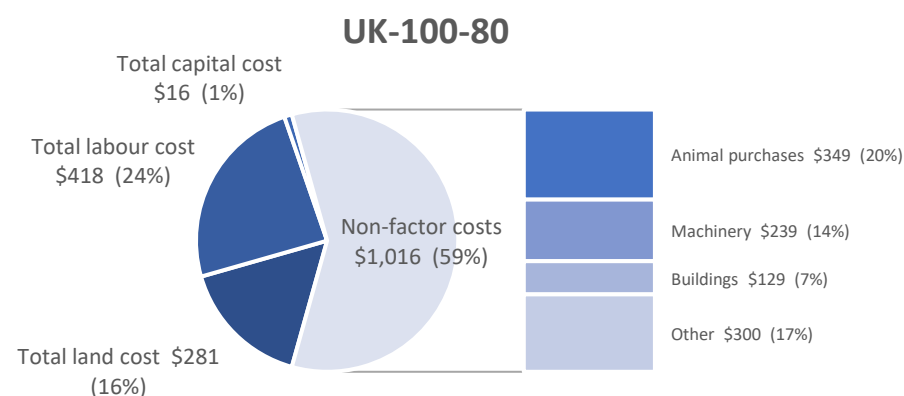
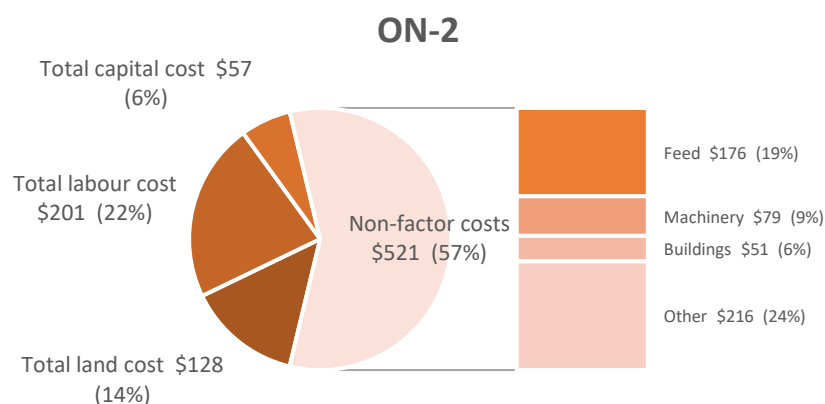
Total costs can be broken down as land, labour, capital, and non-factor costs. While per-cow costs are considerably higher on **UK-100-80**, cost structure, wherein these costs are expressed as a percentage of total farm costs, is remarkably similar between the two farms.

Land costs account for 14% of total costs on **ON-2**, and 16% of total costs on **UK-100-80**. Land rent is considerably lower on **ON-2**; rented land is priced at \$134/ac (mostly cropland), and rent calculated for owned land is \$45/ac (mostly grassland). Meanwhile, both rented land and rents calculated for owned land on **UK-100-80** are \$165/ac. The higher land rent, combined with smaller herd size, results in higher per-cow land costs on **UK-100-80**.

Labour costs account for 22% of total costs on **ON-2**, and a similar 24% of total costs on **UK-100-80**. Total labour hours on both farms are similar (1,739 hr on **ON-2**, 1,847 hr on **UK-100-80**), with a reliance on unpaid family labour on both farms. Sixty-four percent of labour hours on **ON-2** are unpaid family labour, at a calculated wage of \$18.63/hr. Paid labour accounts for the remaining 36% of labour hours, at a paid wage of \$18.17/hr. On **UK-100-80**, all labour hours are unpaid family labour, at a calculated wage of \$22.63/hr.

Capital costs are the smallest share of total costs on both farms, accounting for 6% of total costs on **ON-2**, and only 1% on **UK-100-80**. The majority of capital costs on **ON-2** is interest on liabilities, whereas on capital costs are primarily as own capital on **UK-100-80**.

Costs (\$/cow)	ON-2	UK-100-80
Total land cost	128	281
Total labour cost	201	418
Total capital cost	57	16
Non-factor costs	521	1,016
Animal purchases	32	349
Feed	176	53
Machinery	79	239
Fuel, energy, lubricants	49	51
Buildings	51	129
Vet & medicine	40	46
Insurance, taxes	40	22
Other inputs	55	127
Total costs	906	1,732



Non-factor costs account for the largest proportion of total costs, accounting for 57% and 59% of total costs on **ON-2** and **UK-100-80**, respectively. On **ON-2**, the most significant non-factor cost is **feed costs**, accounting for 33% of non-factor and 19% of total costs. This is primarily associated with purchased feed, but seed and fertilizer costs for homegrown feed production is also included. Meanwhile, feed costs on **UK-100-80**, which relies more heavily on homegrown feeds, are only 5% of non-factor and 3% of total costs. On **UK-100-80**, **animal purchases** are the most significant non-factor cost, accounting for 34% of non-factor and 20% of total costs. Other significant non-factor costs on both farms are **machinery** costs (15% of non-factor costs on **ON-2**, 23% of non-factor costs on **UK-100-80**) and **building** costs (10% of non-factor costs on **ON-2**, 13% of non-factor costs on **UK-100-80**).

Whole Farm

Other Farm Enterprises

In addition to the cow-calf operation, **UK-100-80** runs an 84 head finishing operation. While there is no retained ownership enterprise on **ON-2**, there is additional revenue generated from additional farm activities.

Cost and Profit

Total farm revenue on **ON-2** averaged \$167,110 over the 5-year period. The majority of farm revenue (89%) is market revenue from the cow-calf enterprise. On **UK-100-80**, average farm revenue is \$337,614. On this farm, market revenue from the finishing enterprise is the largest revenue source (45% of total revenue), followed by the cow-calf enterprise (33%), and government payments (22%).

Total farm expenses on **ON-2** averaged \$111,825. The cow-calf enterprise is the largest source of expenses, accounting for 36% of total expenses, followed by fixed costs (23%), and wages, rent, and interest (22%). Total expenses on **UK-100-80** averaged \$323,388. As with costs, the most significant source of farm expenses is the finishing enterprise, accounting for 37% of total expenses. Depreciation is also a significant farm expense (20% of total), followed by the cow-calf enterprise, accounting for only 16% of total expenses on this farm.

Whole-farm cost and profit		
Costs (\$)	ON-2	UK-100-80
Revenue		
Market revenue	149,223	264,545
Cow-calf	149,145	111,045
Retained ownership	0	153,500
Crop production	78	0
Other farm revenue	18,112	27
Government payments	0	73,042
Change in inventory	-224	0
Total farm revenue	167,110	337,614
Expenses		
Depreciation	14,866	64,531
Fixed costs	25,641	31,996
Wages, rent, interest	24,463	33,958
Cow-calf	40,553	51,688
Retained ownership	0	118,762
Crop production	6,302	22,453
Total farm costs	111,825	323,388
Profits		
Net income	55,285	14,226
Net cash farm income	70,372	78,730

Both farms are able to maintain whole-farm profitability over the 5-year term. On **UK-100-80**, the success of the finishing enterprise, as well as government payments, allow this farm to overcome the negative medium- and long-term profits of the cow-calf enterprise. **ON-2** averaged a whole-farm **net income** of \$55,285^a, and **net cash farm income** of \$70,372^b. **UK-100-80** had an average net income of \$14,226^a, and an average net cash farm income of \$78,730^b, over the 5-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.