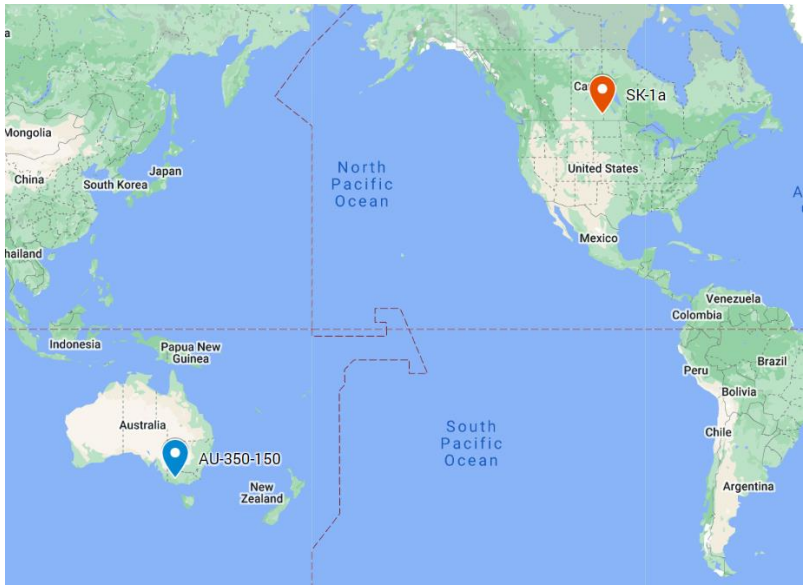
Case Study - SK-1a vs. AU-350-150

Farm Descriptions

SK-1a is a cow-calf through yearling grasser operation, also selling some bred heifers, located in Central Saskatchewan, Canada. Three hundred and fifty beef cows head this herd of Angus-Hereford crosses. The cow-calf enterprise is located on 3144 ac, and yearling grassers on 335 ac, with black chernozemic and gleysolic soils. Mean annual temperature is 1.5°C, with 500mm mean annual precipitation.

AU-350-150 is a cow-calf through finishing operation located in the Western District of Victoria, Australia. This farm maintains a 350 head cow herd, keeps Angus cattle, and operates on 678 ac with predominantly silty clay soils. The finishing operation is maintained on 2,104 ac. Mean annual temperature is 12.2°C, and meal annual precipitation is 650mm.



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Production System and Physical Performance Indicators

Similarities

Comparison of **SK-1a** and **AU-350-150** was chosen due to similarities in herd size, mean annual precipitation, retained ownership, and calves weaned per 100 cows. The most significant difference in production system is mean annual temperature, and the "tropical" climate experienced on AUS-350-150, influencing forage production.

	SK-1a	AU-350-150
Beef cows (hd)	350	350
Breeds	Angus-Hereford crosses	Angus
Mature cow weight (lb)	1200	1100
Weaning age (d)	195	153
Weaning weight (lb)	465	485
200 day adjusted weaning weight (lb)	532	635
Weaning weight as % mature cow weight	39	44
Price per head for weaners sold ($/hd)	1010	643
Calf death loss	0.8	2.0
Calves weaned per 100 cows (hd)	87	89
Replacement rate (%)	17.5	21
Annual sales (hd)	236	157
Sale weight (lb)	835	895
Feed purchased (% as-is)	12	0
Income sources	Cow-calf, yearling grasser, bred heifers	Cow-calf, finishing

Cow Performance and Weaning

Mature cows are heavier on **SK-1a**. Calves are weaned 6 weeks of age earlier on **AU-350-150**, though at a heavier weaning weight, than **SK-1a**. As such, there is a considerable difference in 200 day adjusted weaning weight, at 532 lb on **SK-1a** and 635 lb on **AU-350-150**. Mature cows are also lighter on **AU-350-150**, therefore weaning weights are a greater percentage of mature cow weight (44%) as compared to **SK-1a** (37%). Calf death loss, and calves weaned per 100 cows, are similar between the two operations. Both farms also maintain a relatively large replacement rate, at 17.5% and 21% for **SK-1a** and **AU-350-150**, respectively.

Cattle Sales and Prices

As *weaners*, sale prices are considerably different; calves are sold at an average of $1,010/head from **SK-1a**, over 1.5x the price of $643/head from **AU-350-150**. Both **SK-1a** and **AU-350-150** also sell retained animals. **SK-1a** sells 150 yearling grassers annually at 835lb, and 86 bred heifers; and **AU-350-150** sells 157 head finished animals at 895lb.

Feed

Both operations rely on primarily homegrown feed; twelve per cent of feed on **SK-1a** is purchased feed. Cows are housed and fed on pasture year-round on both farms. On **AU-350-150**, climatic conditions allow year-round grazing. On **SK-1a**, cows begin swath grazing in fall for 112 days, followed by 68 days of grazing standing corn, and 42 days of a hay-based ration.

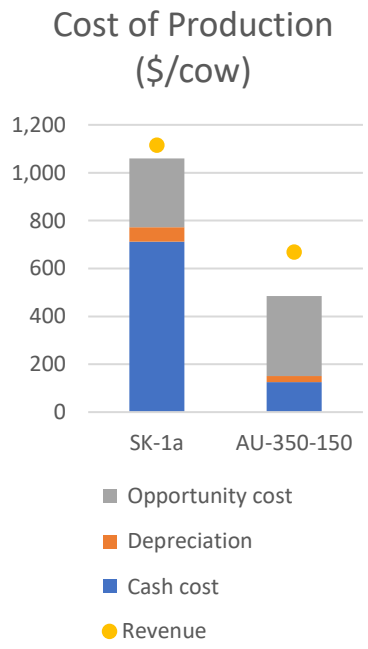
Cow-calf Enterprise

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-1a** averaged $1,060/cow from 2016-2020. This is more than twice the total cost of the cow-calf enterprise on **AU-350-150**, at $485/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 a considerably larger portion of total costs on **SK-1a**, at 67%, than on **AU-350-150**, at only 26% of total costs.

Total costs of the cow-calf enterprise		
Costs ($/cow)	**SK-1a**	**AU-350-150**
Cash costs	712	126
Depreciation	60	26
Opportunity cost	288	334
Land	42	194
Labour	209	108
Capital	38	32
Total cost	1,060	485
Revenue	1,114	668
Short-term profit	402	542
Medium-term profit	342	516
Long-term profit	54	183



Opportunity costs are calculated for unpaid family labour, owned land, and capital. On **SK-1a**, opportunity costs for labour account for 73% of opportunity costs, and 20% of total costs. On **AU-350-150**, opportunity costs account for 69% of total costs. The largest proportion of opportunity cost is associated with land, accounting for 40% of total costs on this farm. Opportunity costs of labour make up a similar proportion of total costs as on **SK-1a**, at 22% of total costs.

Revenue from the cow-calf enterprise, including weaned calf and cull sales, was $1,114/cow on **SK-1a**, and $668/cow on **AU-350-150**. Where total costs were 220% larger on **SK-1a**, revenue is 170% larger, as compared to **AU-350-150**.

Both **SK-1a** and **AU-350-150** were able to remain profitable in the short-, medium-, and long-term over the 5-year period. **Short-term profits** (revenue – cash costs) averaged $402/cow and $542/cow, **medium-term profits** (revenue – cash and depreciation costs) averaged $342/cow and $516/cow, and **long-term profits** (revenue – cash, depreciation, and opportunity costs) averaged $54/cow and $138/cow for **SK-1a** and **AU-350-150**, respectively.

Cost Structure

Total costs can be broken down as land, labour, capital, and non-factor costs. Total labour, capital, and non-factor costs are higher on **SK-1a**, while total land costs are higher on **AU-350-150**, though these make up different proportions of total costs.

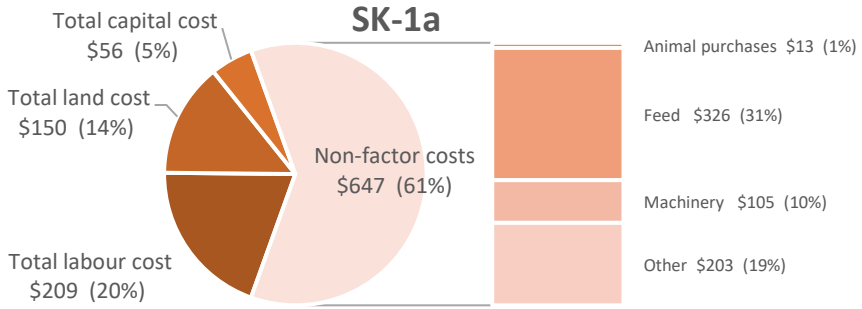
Land costs are the largest contributor to total costs on **AU-350-150**, accounting 40% of total costs. This is compared to 14% of total costs associated with land costs on **SK-1a**. While **AU-350-150** maintains a smaller land base (690 ac vs. 3143 ac), and owns all land, per-acre land costs ($98/ac) are approximately 6 times larger than for both rented ($17/ac) and owned ($16/ac) land on **SK-1a**.

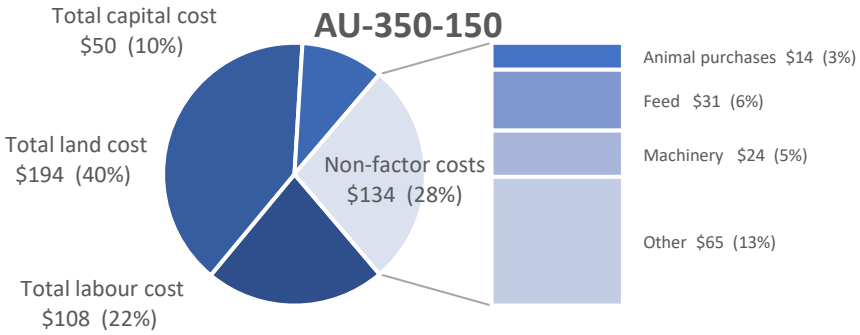
Labour costs make up a similar proportion of total costs on both farms, at 20% and 22% of total costs on **SK-1a** and **AU-350-150**, respectively. Both farms rely entirely on unpaid family labour, with comparable calculated wages of $22.11/hr on **SK-1a** and $22.05/hr on **AU-350-150**. Differences lie in total labour hours. These are 3,314 hr on **SK-1a**, and 1,709 hr on **AU-350-150**.

Costs ($/cow)	SK-1a	AU-350-150
Total land cost	150	194
Total labour cost	209	108
Total capital cost	56	50
Non-factor costs	647	134
Animal purchases	13	14
Feed	326	31
Machinery	105	24
Fuel, energy, lubricants	35	14
Buildings	40	12
Vet & medicine	22	8
Insurance, taxes	30	19
Other inputs	76	13
Total costs	1,060	485

Capital costs account for the smallest proportion of total costs, at 5% and 10% on **SK-1a** and **AU-350-150**, respectively. The majority of capital costs on both farms are own capital ($38/cow and $32/cow, respectively), followed by interest on liabilities ($18/cow on both farms).

Non-factor costs are the largest component of total costs on **SK-1a**, accounting for 61%, and the second-largest component on **AU-350-150**, accounting for 28% of total costs. Of these, costs associated with **animal purchases**, **fuel**, **buildings**, **veterinary and medicine**, **insurance and taxes**, and **other inputs**, make up similar, small (<5%) proportions of total cost on both farms. Differences in non-factor costs lie primarily in **feed** and **machinery** costs. Feed costs account for 31% of total costs on **SK-1a**. These include costs associated with purchased feed (10% of total costs), costs associated with feed production such as fertilizer (9%) and seed (6%) costs, and land improvement (3%). Feed costs account for only 6% of total costs on **AU-350-150**, and are associated primarily with fertilizer and herbicide costs for feed production.





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Whole Farm

Other Farm Enterprises

In addition to the cow-calf operation, **SK-1a** generates additional farm revenue from retained ownership of yearling grassers, and some bred heifers. **AU-350-150** also retains ownership, operating a cow-calf through finishing operation.

Cost and Profit

On both farms, a similar proportion of total farm revenue can be attributed to the cow-calf and retained ownership enterprises. On **SK-1a**, 64% of total farm revenue comes from cow-calf, and 36% from retained ownership. Total farm revenue averaged $605,425 over the five-year period. On **AU-350-150**, 58% of total revenue is attributed to cow-calf, and 42% to retained ownership, with an average total farm revenue of $404,313.

In contrast, the retained ownership enterprise accounts for the largest proportion of total costs, accounting for 37% of total costs on **SK-1a** and 55% on **AU-350-150**. On **SK-1a**, other significant farm expenses are associated with fixed costs (21% of total costs), crop production (13%), and the cow-calf enterprise (12%). On **AU-350-150**, fixed costs (15% of total costs) and crop production (12%) are also significant sources of expenses, whereas the cow-calf enterprise only accounts for 5% of total costs.

Whole-farm cost and profit Costs ($)	SK-1a	AU-350-150
Revenue		
Market revenue	608,117	403,775
Cow-calf	389,999	233,716
Retained ownership	218,118	170,060
Cash crop	0	0
Other farm revenue	1,056	538
Government payments	0	0
Change in inventory	-3,748	0
Total farm revenue	605,425	404,313
Expenses		
Depreciation	32,732	15,441
Fixed costs	107,991	30,212
Wages, rent, interest	51,894	10,703
Cow-calf	63,554	9,280
Retained ownership	191,743	108,975
Crop production	68,966	23,492
Total farm costs	516,880	198,103
Profits		
Net income	88,545	206,210
Net cash farm income	125,019	221,113

In addition to a profitable cow-calf enterprise, both farms maintain positive average whole-farm profits over the 5-year period. **SK-1a** averaged a net income of $88,458[a], and net cash farm income of $125,019[b]. **AU-350-150** averaged a net income of $206,210[a], and a net farm cash income of $221,113[b].

[a]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

[b]Net cash farm income = Whole farm profitability + depreciation + changes in inventory + capital gains/losses.