



Alberta Pork Cost of Production Study 2019

Industry Edition

Introduction

Alberta is the fourth-largest pork-producing province in Canada, where under 200 core producers are responsible for producing roughly 2.7 million pigs per year that are marketed at home in Canada and internationally to Japan, the U.S., Mexico, China, and many other countries. As Alberta producers strive to remain competitive in an international marketplace, the sustainability of our primary production base is directly related to our industry competitiveness when compared to other Canadian pork producers and our counterparts in the U.S.

Hog farm profitability is driven by two components – cost of production and revenues received per animal marketed. Having a keen understanding of both aspects is essential for the producer to remain competitive and to maintain a viable operation. Benchmarking costs against other Alberta producers, other Canadian producers and, ultimately, against producers in the U.S. is key to staying competitive.

In 2015, Alberta Pork conducted a cost of production pilot project which was designed to provide contextual information on the average cost of the production in the province. As most producers operate their businesses in isolation from one another, it may be impossible for them to make economic comparisons relative to cost of production. It is further impossible to relate those costs to comparable costs in other regions of Canada or other global competitors.

Since the 2015 study there has been a continued industry consolidation as producers struggled to stay viable and this resulted in stagnated hog production of around 2.7 million pigs in 2019. Production remained flat as producers navigated lower hog prices. In the first half of the decade commencing 2010, producers received base prices of around \$154 per 100 kg (cKg) in the latter half of the decade the average price declined to \$147 per cKg. Over the last five years, MNP (formerly Meyers Norris and Penny) estimates that production costs have trended higher and contributed to average losses close to \$13 per marketed hog. Tighter margins have disincentivized investment. Hog barn expansions and replacement have also slowed in the province, with less than 6 new barns built in the last five years.

2019 was demarked by two major events that shaped much of the Alberta pork market narrative. With China being the largest producer and consumer of pork in the world, African Swine Fever (ASF) ravaged China's hog production, with half of the pigs either dead from the disease or culled to eradicate the virus. The shortage of pork resulted in surging domestic prices which climbed as high as 110% year-over-year in November. In Alberta, exports surged in the first six months of the year, as supply increased to meet increased demand from China. Meanwhile, as geopolitical tensions between the US and China ramped up, Canada became entangled in the melee and by June China blocked all pork exports from Canada after an alleged case of pork with traces of ractopamine was found in a shipment from Canada to China.

The ensuing four-month suspension trade dampened Alberta pork export growth and led to a drop in export prices. Also, although Alberta hog prices surged for the first five months of 2019, it gave back almost all the gains by the end of the year. In a similar fashion, Alberta feed prices jumped in the first half of the year but trended down over the next half of the year. With output and input prices trending together, what can be said of the Alberta hog producer profitability? This cost of production study helps to shed light on the state of producer profitability and other issues that could impact competitiveness of our hog producers.

Study Respondents

In December 2019 hog producers across the province were invited to participate in the 2019 cost of production study. Twenty-three (23) producers responded to this invitation. Their operations represented over 8% of the total number of sows in operation and varies from just over 250-sow to around 1000-sow farrow-to-finish and the finished hogs marketed represent almost 10% of Alberta hog production. An average just shy of 11,600 finisher hogs were marketed with an average live weight of 125 kilograms. Spatially, fourteen of the producers operate in the southern region, six in the central region and three in the northern region. Caution should be exercised in making extrapolations to the performance of all Alberta producers from these results.

Alberta Pork COP Model - Preliminary Production and Labour Survey Results for the 2019 Calendar Year*				
SUMMARY - 23 Farrow to Finish Producers Surveyed Hog Production Data	Average	Median	Range	
			Minimum	Maximum
Hogs/Pigs				
Number of Pigs Sold per Production Unit	11,955	10,922	4,306	23,65
Finished Hogs	11,594	11,176	4,306	23,65
Feeders/Weaners	48	19	0	37
Culled Sows/Boars	203	188	50	37
Other	110			
Live Weight of All Pigs Sold per Production Unit (kg)	1,435,536	1,314,442	489,119	3,075,67
Average Live Weight per Pig Sold (kg/pig)	125.0	124.4	108.5	135.
Average Dressed Weight of Finished Hogs Sold (kg/hog)	99.3	98.1	95.0	105.
Average Index of Finished Hogs Sold	110.53	110.80	102.10	113.1
Labour Utilization				
Paid Labour per Pig Sold (minutes/pig)	24.77	24.77	15.28	34.2
Unpaid/Family Labour per Pig Sold (minutes/pig)	41.99	40.51	12.22	92.7
Paid Management per Pig Sold (minutes/pig)	8.57	8.57	8.57	8.5
Unpaid/Owner Management Per Pig Sold (minutes/pig)	15.54	15.62	3.40	34.3

*Most participants submitted data on the Calendar year. However, there are a few participants whose financial year corresponds to the calendar year. The assumption was that the profile for the calendar year matched the financial year.

2019 Cost of Production Survey Results

Revenue

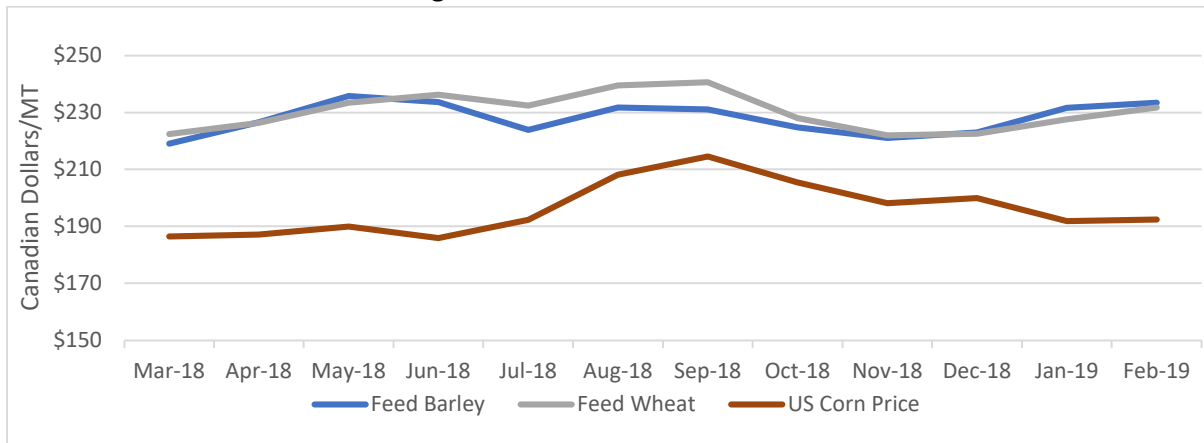
Based on the survey results, farm revenue averaged around \$192.27 per market hog sold and ranged between \$175 and \$218. On a per kilogram live-weight basis of market hog sold, revenues were clustered narrowly around . Alternate sales and other incomes lifted revenues while the average hog market price averaged \$188. MNP 2019 revenue estimates were about \$20 per market hog lower than survey revenues, mainly reflecting market hog prices which were on average \$16 per hog lower. Unweighted average¹ farm revenues of participating farms were marginally higher than that of producers in Iowa, signalling that market quality premiums are scarcely passed on to the Alberta producer. Relative to the previous study in 2015, revenues dropped \$25 per pig sold from around \$217 per pig sold.

Total Cost of Production

The unweighted average total cost of production (COP) of respondents was around \$198 per market hog sold. As expected, feed cost was the largest contributor to total costs, representing 63% of total costs or 83% of operating costs. Grains tended to be the largest cost component of feed. In Alberta grain feed largely consists of wheat and barley which averaged over \$220 per metric tonne in 2019. In the US, where the diets are largely corn and soy based, corn prices were lower averaging CDN\$196 per metric tonne in 2019.

¹ Weighted average calculations were means based on the relative number of market pigs sold while the unweighted averages reflect simple means. With limited number of respondents, results of the large producer would weigh heavily on average values which would be an accurate presentation of revenues and costs associated with pigs in this survey. This, however, could crowd out the story of all other producers in the study. So, unweighted means were presented, giving a more accurate account across producers.

Alberta 2019 Feed Cost Disadvantage



Source: PDQ and USDA

Next to feed costs, pig health expenses were the second highest ranked operating expenses. The average unweighted total cost of production was about \$5 higher than the weighted average, indicating that the larger producers' lower cost of production pushed down the weighted average.

The cost of labour, estimated at an average of \$20 per market hog, was about 10% of the average total cost of production. Indicative of labour on the colonies, there were 2.72 unpaid full-time equivalents working in barns, working almost 51 hours per week or an average of 42 minutes per market hog sold. In contrast, there was an average of 3.1 paid full-time labour equivalents working on independent farms, doing 5 hours less per week and spending just over half the minutes per market pig produced. In most operations, management also worked in the barn and so the management cost tended to be small relative to in-barn labour costs.

Average capital costs of about \$28 per market hog sold was the second largest cost category after operating costs. Capital costs represented 14% of the total average cost of production. Capital costs include the cost of depreciation on buildings and machinery, investment costs on land, buildings, and machinery as well as capital costs and estimates of taxes. With the average age of barns around 20 years old and the estimated current value averaging \$5 million, barn depreciation and investment costs are estimated at around \$27 per hog. This represented over 95% of total capital costs. Taxes were estimated at \$1.40 per market hog.

The survey average COP was about \$12 per hog above the MNP 2019 estimate of \$186 per market hog. The average cost of production was marginally above costs reported under the Ontario benchmark but was between Manitoba's Home-mixed feed and purchase feed benchmarks. The average cost of production was about \$23 above the Iowa benchmark. Relative to the 2015 study, weighted average costs have increased by \$166 per market hog sold.

Net Profit

With increased costs and lower revenues, 39% of participating producers experienced economic losses. There were unweighted losses of per pig sold. This contrasted markedly to the economic profits of close to \$5.30 per pig sold reported in the 2015 study. The contribution margin indicated that revenues are inadequate to cover fixed costs such as the capital costs. This continues to signal that there should be no investment in barns and no expansion in operations. If pricing signals were more appropriate producers would have a greater incentive increase production and be more profitable. MNP estimated 2019 losses of close to \$13.50 per market hog and generally is in line with losses made across Canada. While there were reported profits in Iowa, USDA estimates have indicated losses equivalent to \$42 across the United States in 2019.

Alberta Pork COP Model - 23 Survey Participants
COP Summary of Other Jurisdictions for the 2019 Calendar Year

Participant Code	Ontario	Manitoba (Purchased - Feed)	Manitoba (Home- Mixed Feed)	Iowa (CDN\$)	Alberta Pork COP (Unweighted)
REVENUE FROM HOG OPERATION (\$ per pig sold)	\$187.30	\$166.13	\$166.13	\$191.06	\$192.27
TOTAL COST OF PRODUCTION (\$ per pig sold)	\$192.83	\$206.28	\$176.33	\$174.61	\$197.58
NET PROFIT / LOSS (\$ per pig sold)	-\$5.53	-\$40.15	-\$10.20	\$16.45	-\$5.30

Alberta Pork COP Model - Preliminary Survey Results for the 2019 Calendar Year*

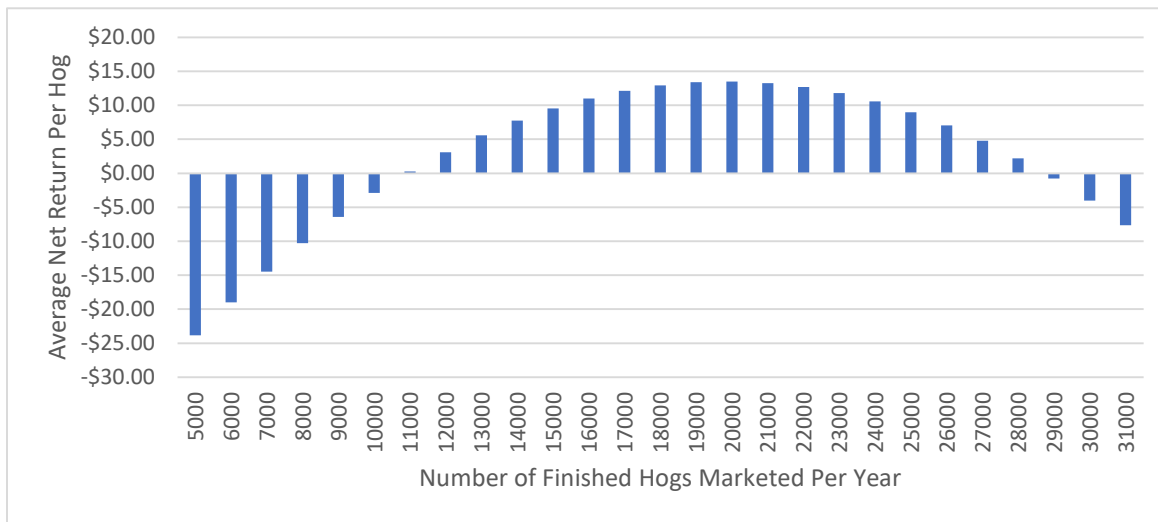
SUMMARY - 23 Farrow to Finish Producers Surveyed Revenue	Revenue(\$ per pig sold)	Revenue (\$ per KG live)			
	Unweighted Average	Average	Median	Range Minimum Maximum	
Revenue from Hog Operation	\$192.27	\$1.554	\$1.563	\$1.400	\$1.741
SUMMARY - 23 Farrow to Finish Producers Surveyed Cost of Production	COP (\$ per pig sold)	COP (\$ per KG live)			
	Average	Average	Median	Range Minimum Maximum	
A) Operating Costs					
Livestock Purchased (Sows/Gilts, Boars, Feeder Pigs)	\$4.25	\$0.033	\$0.032	\$0.000	\$0.074
Breeding Costs (AI supplies, semen)	\$0.32	\$0.004	\$0.000	\$0.000	\$0.027
Feed	\$124.22	\$0.984	\$0.993	\$0.706	\$1.326
Veterinary & Medicines	\$5.74	\$0.048	\$0.041	\$0.024	\$0.097
Utilities	\$4.83	\$0.038	\$0.043	\$0.018	\$0.059
Freight & Transportation	\$2.80	\$0.022	\$0.012	\$0.000	\$0.098
Tractor & Equipment Operation (Fuel & Maintenance)	\$0.10	\$0.001	\$0.000	\$0.000	\$0.004
Repairs & Maintenance	\$3.54	\$0.027	\$0.027	\$0.001	\$0.061
Straw & Bedding	\$0.02	\$0.000	\$0.000	\$0.000	\$0.001
Office & Business Costs	\$0.74	\$0.007	\$0.002	\$0.000	\$0.023
Insurance	\$1.41	\$0.011	\$0.015	\$0.000	\$0.038
Custom Charges	\$1.46	\$0.008	\$0.000	\$0.000	\$0.092
Lease & Rental Costs	\$0.03	\$0.000	\$0.000	\$0.000	\$0.004
Operating Costs	\$149.45	\$1.181	\$1.207	\$0.901	\$1.569
B) Labour & Management					
Hired/Paid Labour	\$1.10	\$0.015	\$0.077	\$0.047	\$0.107
Unpaid/Family Labour	\$16.05	\$0.119	\$0.149	\$0.037	\$0.314
Paid Management	\$0.08	\$0.001	\$0.010	\$0.010	\$0.010
Unpaid/Family Management	\$2.85	\$0.022	\$0.019	\$0.003	\$0.078
Labour & Management Costs	\$20.08	\$0.157	\$0.157	\$0.071	\$0.348
C) Capital Costs					
Depreciation	\$14.92	\$0.114	\$0.091	\$0.052	\$0.350
Investment Cost	\$11.60	\$0.090	\$0.074	\$0.035	\$0.237
Operating Interest	\$0.00	\$0.002	\$0.000	\$0.000	\$0.017
Taxes	\$1.40	\$0.011	\$0.010	\$0.002	\$0.038
Capital Costs	\$28.05	\$0.217	\$0.175	\$0.092	\$0.625
TOTAL COST OF PRODUCTION	\$197.58	\$1.554	\$1.541	\$1.264	\$2.542
CONTRIBUTION MARGIN (Return to Capital & Management)	\$25.67	\$0.240	\$0.237	-\$0.238	\$0.486
NET PROFIT / LOSS	-\$5.30	\$0.000	\$0.037	-\$0.897	\$0.231

*Most participants submitted data on the Calendar year. However, there are a few participants whose financial year corresponds to the calendar year. The assumption was that the profile for the calendar year matched the financial year.

Discussion

Survey revenues were more closely clustered around the mean than costs and net returns. Based on the survey 95% of revenues would lie within \$14/ hog of the mean, while 95% of costs and returns were within \$48 of their mean. Revenues being more closely clustered indicates that even though producers may be shipping hogs to different locations revenues were not significantly different from the average. On the other hand, the wide variability in costs and subsequent net returns are partially attributable to the variability in the scale of operations. Larger operations were better able to keep their per unit costs lower than smaller operations. This is mainly due to the considerable fixed costs. For smaller operations, average fixed costs are more likely to be higher as the barns, which tended to be larger and more costly in Alberta, were spread over fewer market hogs. However, operations with more hogs can spread such fixed costs and keep their average cost low. Based on the survey data, operations marketing under 20,000 hogs per year could increase their profits by increasing production. However, with revenues on a downward trajectory and current losses, it would be difficult to financially validate increased production for the average producer.

Estimated Net Return Curve



Sensitivity Analyses

Sensitivity analyses were conducted on the impact calculation of capital investment assumptions on the cost of production. Specifically, assumptions surrounding the interest rate and per cent of equity required to leverage the investment in land, buildings and equipment used in hog operations. Under the base assumption, where the interest rate of 5% is applied to 40% of the current market value of building and equipment used on farm, the average total cost of production was just above \$197 per market hog sold. If 80% of the current market value is used with the interest rate held constant, the average total cost of production climbs to just above \$206 per market hog sold. If the interest rate of 2.5% is applied to 80% of the current market value of building and equipment then, the cost of production is relatively the same as the base while if the rate of 7% applied at 40% of the current market value (as per the Ontario assumptions) the average cost of production is just under \$202. Over the range of scenarios, losses range between \$2 and \$7 per market hog sold. The base assumption for the interest cost assumption on land of 4% on 80% of the current land value is compared to lower rates of 2% and higher rates of 7% assessed on 40% to 80% of the current market value results in average cost of production between \$197 and \$202 or losses between \$5 and \$10.

Building and Equipment				
	Base Assumption	Alternative Assumption 1	Alternative Assumption 2	Alternative Assumption 3
Interest Rate	5%	5%	2.5%	7%
Per cent Leveraged	40%	80%	80%	40%
Cost of Production (\$/market hog)	\$195.30	\$204.12	\$194.53	\$199.45
Net Profit (\$/market hog)	-\$3.03	-\$11.85	-\$2.26	-\$7.18

Land				
	4%	4%	2%	7%
Interest Rate	4%	4%	2%	7%
Percent Leveraged	80%	40%	80%	80%
Cost of Production (\$/market hog)	\$195.30	\$195.24	\$195.24	\$199.54
Net Profit (\$/market hog)	-\$3.03	-\$2.97	-\$2.97	-\$7.27

Conclusion

While geopolitical factors may have inhibited price growth and ultimately farm revenues for many Albertan producers, costs continued an upward trajectory in 2019. Average revenues of around \$192 per market hog was insufficient to cover sustainable production in the province. The average cost of production of 23 producers surveyed was \$198 per market hog sold. Producer revenues were generally on par with that of US producers, which suggests that although international markets pay a premium for the Canadian pork, very little of that premium is passed on to the average Albertan hog producer. In other words, producers were hardly being compensated while it was costing them more to produce a more desirable pork. The inability to accurately transmit pricing signals to the farm-level meant that there was and will continue to be under-production and this under-production will get systemically worse as barns age. However, if the pricing system is changed, then producers will have the proper incentives to invest in their barns and expand production, which is a win not just for producers but for the whole industry.

Assumptions

This information sheet provides the key assumptions that were used in this the cost of production study. The report produces an historical estimate of the cost of production of participants in the survey.

Assumptions

1. Accruals – All incomes and expenses reported were assumed to accrue to the calendar year 2019. Except for two producers, all producers have year-end dates of December 31. For those with year-end dates other than December 31, where possible, select grain prices were modified to reflect the 2019 average to compute feed costs (holding feed consumption constant). Revenues were assumed constant from the financial year to the calendar year.
2. Labour Cost - These costs will vary depending on the number of employees, wage and benefit level, number of hours worked and management and owner-operator labour allocation. For this study, instances where wage was either not available or provided, experienced barn labour was priced at \$23.08/ hour, inexperienced labour is valued at minimum wage of \$15 and management was priced at \$26.50/ hour.
3. Capital Costs (Depreciation, Interest, Taxes, and Insurance) - The estimated building, equipment and site cost values were based on DGH Engineering Ltd estimates published by Manitoba Pork.
 - Depreciation - Depreciation is estimated using the straight-line approach.
 - Buildings were assumed to have a useful life of 30 years and a salvage value of 10%.
 - Building renovations were assumed to have a useful life of 25 years and a salvage value of 10%.
 - Transportation equipment such as trucks and cars were assumed to have a useful life of 15 years and a salvage value of 5%.
 - Generators were assumed to have a useful life of 30 years and a salvage value of 10%.
 - Non-transportation farm equipment such as tractors and augers were assumed to have a useful life of 15 years and a salvage value of 10%.
 - Interest - The interest cost on buildings was estimated using 40% of the investment value at a rate of 5%. while the interest cost on land is estimated using 80% of the investment value at a rate of 4% (5-year mortgage rate less 0.25% for 2019)
 - Taxes-If not stated by the producer, is assumed to be 75% of total building investment accrued to hog production multiplied by the 2019 mill rate associated with the farm location.
 - Land values were based on the 2019 FCC Farmland Values report based on the farm region.