



BUILDING BUSINESS SUCCESS

Cost of Production and Enterprise Analysis for Sheep Production in the Peace Region of British Columbia

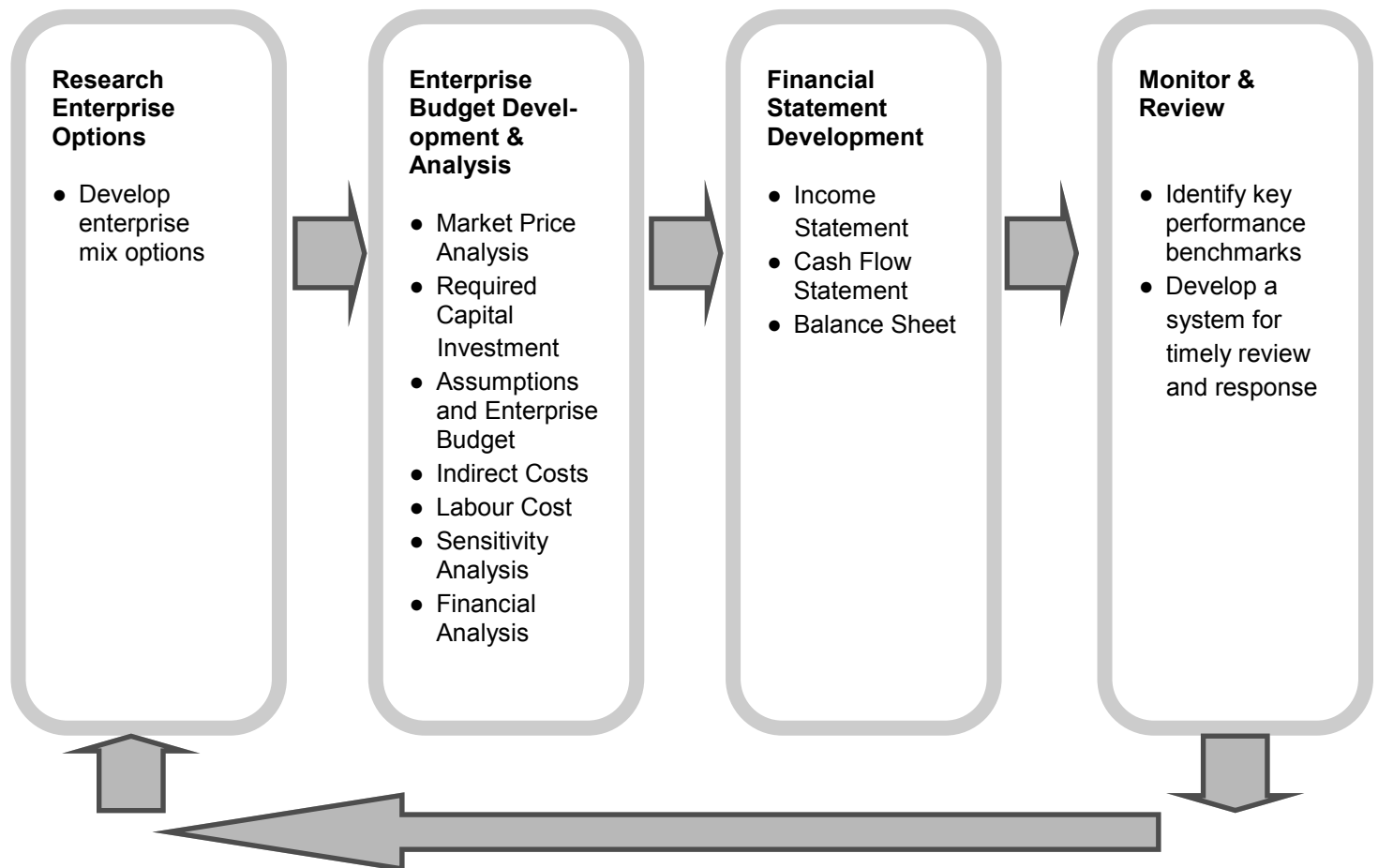
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The **BUILDING BUSINESS SUCCESS** enterprise budget series were developed to provide information to assist producers in projecting costs and returns for British Columbia farm enterprises. These budgets are one part of the overall financial planning process that assists in decision making, monitoring and reviewing the whole farm business. This information is provided as a tool for projecting costs and returns for specific farm enterprises and as a general guide for preparing individual financial plans. This sample budget is only a guide and is not intended as an in depth study of the cost of production for this industry. Interpretation and utilization of this information is the responsibility of the user. If assistance is required to develop your individual budget, consult your own accountant, lawyer or an agrologist to address your specific circumstance. Producers should develop their own budget to reflect individual production goals, costs and market prices. Additional financial planning information and farm enterprise budgets can be found at the Ministry website or obtained from a local B.C. Ministry of Agriculture office.

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Overview of the Financial Planning Process





General Background

British Columbia sheep production is distributed throughout the province. There are approximately 55,000 lambs produced in BC, with approximately 9,000 of those coming from the Peace Region.

Typically, lambs are marketed as either feeder or market lambs. In the BC Peace, feeder lambs are often sold through Beaver Hill Auction at Tofield, Alberta, while the market lambs are sold to Sungold Specialty Meats of Innisfail, Alberta, however, there are local abattoirs that custom slaughter lambs for local sales.

Lamb prices have increased due to strengthening demand for lamb.

This report estimates the costs and returns for hypothetical flocks of 50, 200, 300, 500 and 1000 ewes, located in the Peace Region.

Prices and management have a significant impact on the financial success of the farm, so, it is essential that producers utilize their own numbers to determine their individualized budgets.



How to Use This Report

Farm Budgeting

This report has been prepared as a guide to assist farmers in preparing a budget to determine the returns and direct input costs of establishing and raising sheep in the Peace River Region of British Columbia. Given the differences and unique circumstances experienced by each individual farm and producer associated with each specific farm, it is essential that this information is only used as a general guide and that a custom budget is prepared to reflect and capture most likely, best case and worst case possibilities for each farm.

An individual producer can also use this report to compare their returns, direct costs and margins to the expected experience of a select group of experienced growers.

This budget does not include overhead and indirect costs, such as depreciation, interest, office, general utilities, accounting, insurance, operator living expenses etc. As these expenses vary greatly from farm-to-farm depending on the specific financial and economic situation of each farm, they have not been included but rather a margin to cover these expenses has been calculated.

Cash-Flow Planning

Cash flow projection is key to financial planning. The information in this report provides an initial guide to the returns and direct expenses as well as a relative indication of the level of these returns and expenses that need to be included. A complete cash-flow budget will need to include both expenses and other cash disbursements such as loan payments (both principle and interest), overhead and indirect expenses such as accounting and professional fees, insurance, office expenses, travel, operator living, and general utilities, income taxes, operator living etc. It will also need to include beginning cash available, loans and other sources of farm and non-farm income.

Financial and Economic Analysis

It is important to note that it is not the intent of this report to provide a complete financial nor economic analysis of the cost of establishing and producing sheep in the Peace Region of BC and cannot be considered as such.

A thorough investigation into capital costs, management requirements and marketing options should be undertaken to ensure success. Each operation will have a different vision, goals and objectives, so, the economic or opportunity costs of other inputs have not been considered nor included. Examples include, opportunity or ownership costs for use of land, operator labour, management etc. Knowing your revenue and costs will allow for individualized financial analysis to be completed for your operation.

For more information or help with developing a financial plan, contact the BC Ministry of Agriculture's Farm Business Advisory Service.



Assumptions — Income and Expense

The following assumptions were made and provided the basis for calculating expected costs and returns in this report. As previously noted, these assumptions may vary between farms and management practices.

1. This report will include information on flock sizes of 50, 200, 300, 500, and 1000 animals as this is the typical progression as operations increase in size.
2. Income and expenses are based on sheep producers surveyed in the Peace Region of BC.
3. A benchmark of expenses was calculated for each of the surveyed operations and utilized in calculating per ewe and per lamb costs.
4. Death loss was calculated for both predatory and non-predatory causes. For ewes a 4% death loss was used for non-predatory causes and 1% was used for predatory causes. For lambs a 2% death loss was used for non-predatory causes and 6% was used for predatory causes.
5. Death loss will vary between operations depending on management and quality of fencing and facilities.
6. A 10% yearly culling rate was used for ewes.
7. The retention rate of ewe lambs to be returned to the flock matches the death loss plus the number of cull ewes.
8. The benchmark for number of lambs born per mature ewe is 1.8 lambs per ewe.
9. The benchmark for number of lambs born per ewe lamb (first time) is 1.2 lambs per ewe.
10. The goal for this budget is to remain at the specified flock size. If the operation is intending on increasing its size, additional calculations would be required.
11. Number of saleable lambs is based on death loss and production parameter assumptions.
12. Revenue is based on current March 2017 prices. For Feeder Lambs, the current price at Beaver Hill Auctions is \$2.30 per pound for a 70 pound lamb.
13. Revenue for market lambs is based on the March 2017 price at Sungold Specialty Meats. The current price is \$1.95 for a 130 pound lamb. Note that lamb prices fluctuate throughout the year.
14. Revenue for a cull Ewe is \$1.00 per pound based on the ewe weighing 150 pounds.
15. Labour rates were calculated at \$20.00/hr. for general farm labour and \$40.00/hr. for farm management activities.
16. Machinery costs are based on sheep producers in the BC Peace. These will vary between operations.
17. Wool sales were priced at \$1/ ewe. Price will vary depending on year and market.

Note – Capital Expenses such as interest and depreciation are included in the analysis; however, these numbers should be used as a guideline only as they can vary greatly between operations.

Calculations:

Contribution Margin = Total Revenue - Total Variable Expenses (Total Production Expenses + Total Operating Expenses + Total Labour Expenses)

Gross Margin = Total Revenue - Total Production Expenses - Total Operating Expenses - Paid Labour - Operating Interest

Net Margin = Total Revenue - Total Production Expenses - Total Operating Expenses - Paid Labour - Capital Expenses



Lamb Production Numbers

The table below calculates the estimated yearly production numbers for various flock sizes. It includes death loss and retention of ewe lambs to maintain flock size. In addition it also provides the number of rams required for each flock size. Total lambs for sale is used in the revenue analysis for a sheep ranch. A number of rams is provided as some will be purchased with a flock, retained ram lambs or purchased from other breeders.

Estimated Yearly Production Numbers for Sheep Ranch

Number of Ewes		50	200	300	500	1000
Non-Predatory Death Loss	4%	-2	-8	-12	-20	-40
Predatory Death Loss	1%	-1	-2	-3	-5	-10
Number of Ewes Culled	10%	-5	-20	-30	-50	-100
Number of Ewe Lambs Retained		8	30	45	75	150
Total Number of Ewes		50	200	300	500	1000

Number of Lambs						
Number of Lambs Born to Mature Ewes	1.8	76	306	459	765	1530
Number of Lambs born to Ewe Lambs	1.2	10	36	54	90	180
Non-Predatory Death Loss	2%	2	7	10	17	34
Predatory Death Loss	6%	5	21	31	51	103
Total Lambs		79	315	472	787	1573
Ewe Lambs Retained for Breeding		8	30	45	75	150
Total Lambs for Sale		71	285	427	712	1423

Number of Rams		3	10	15	25	50
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Revenue - Feeder Lamb Enterprise

The table below shows the revenue projections for a feeder lamb enterprise. Typically, lambs are raised until they are approximately 70 pounds in weight and then sold through an auction mart.

Estimated Yearly Revenue Numbers for Sheep Ranch (Feeder Lambs 70 lbs.)

	Weight (lbs.)	Price	Number of Ewes				
			50	200	300	500	1000
Lambs to be Sold			71	285	427	712	1423
Cull Ewes to be Sold			5	20	30	50	100
Lambs (70 lb. average)	70	\$ 2.30	\$ 11,431	\$ 45,885	\$ 68,747	\$ 114,632	\$ 229,103
Cull Ewes	150	\$ 1.00	\$ 750	\$ 3,000	\$ 4,500	\$ 7,500	\$ 15,000
Wool			\$ 50	\$ 200	\$ 300	\$ 500	\$ 1,000
Total Income			\$ 12,231	\$ 49,085	\$ 73,547	\$ 122,632	\$ 245,103

Price based on March 2017 Beaver Hill Auction Prices



Revenue - Market Lamb Enterprise

The table below shows revenue projections for a market lamb enterprise. Typically, lambs are raised until they are approximately 130 pounds in weight and then sold directly to an abattoir or a meat processing plant. Prior to selling, it is important to compare potential buyers as quality premiums may differ and such premiums can significantly increase revenue.

Estimated Yearly Revenue Numbers for Sheep Ranch (Market Lambs 130 lb liveweight)

	Weight (lbs.)	Price	Number of Ewes				
			50	200	300	500	1000
Lambs (130 lb. average)	130	\$ 1.95	\$ 17,999	\$ 72,248	\$ 108,245	\$ 180,492	\$ 360,731
Cull Ewes	150	\$ 1.00	\$ 750	\$ 3,000	\$ 4,500	\$ 7,500	\$ 15,000
Wool			\$ 50	\$ 200	\$ 300	\$ 500	\$ 1,000
Total Income			\$ 18,799	\$ 75,448	\$ 113,045	\$ 188,492	\$ 376,731

Price based on March 2017 Sungold Specialty Meat Prices



Income Statement - Feeder Lamb Enterprise

The table below calculates the estimated income statement for a feeder lamb enterprise. Costs are based on a survey of sheep producers in the Peace Region of BC. These costs have been extrapolated into 50, 200, 300, 500 and 1000 animal flocks.

Income Statement Feeder Lamb Enterprise

Flock Size

Income		Flock Size					
		50	200	300	500	1000	
	\$/Ewe						\$/lamb
Lambs (70 lb. average)	\$ 229.16	\$ 11,431	\$ 45,885	\$ 68,747	\$ 114,632	\$ 229,103	\$ 161.00
Cull Ewes	\$ 15.00	\$ 750	\$ 3,000	\$ 4,500	\$ 7,500	\$ 15,000	\$ 10.54
Wool	\$ 1.00	\$ 50	\$ 200	\$ 300	\$ 500	\$ 1,000	\$ 0.70
Total Revenue	\$ 245.16	\$ 12,231	\$ 49,085	\$ 73,547	\$ 122,632	\$ 245,103	\$ 172.24
	\$ cost/ewe						\$ cost/lamb
Production Expenses							
Hay	\$ 65.38	\$ 3,269	\$ 13,076	\$ 19,614	\$ 32,690	\$ 65,380	\$ 45.95
Grain	\$ 5.48	\$ 274	\$ 1,096	\$ 1,644	\$ 2,740	\$ 5,480	\$ 3.85
Supplement	\$ 1.42	\$ 71	\$ 284	\$ 426	\$ 710	\$ 1,420	\$ 1.00
Salt/Mineral	\$ 3.41	\$ 171	\$ 682	\$ 1,023	\$ 1,705	\$ 3,410	\$ 2.40
Total Production Costs	\$ 75.69	\$ 3,785	\$ 15,138	\$ 22,707	\$ 37,845	\$ 75,690	\$ 53.19
	\$ cost/ewe						\$ cost/lamb
Operating Expenses							
Trucking	\$ 2.84	\$ 142	\$ 568	\$ 852	\$ 1,420	\$ 2,840	\$ 2.00
R&M Buildings	\$ 5.22	\$ 261	\$ 1,096	\$ 1,644	\$ 2,740	\$ 5,480	\$ 3.85
R&M Machinery	\$ 10.49	\$ 525	\$ 284	\$ 426	\$ 710	\$ 1,420	\$ 1.00
Fuel, Oil, & Lube	\$ 2.27	\$ 114	\$ 682	\$ 1,023	\$ 1,705	\$ 3,410	\$ 2.40
Small Tools	\$ 8.39	\$ 420	\$ 1,678	\$ 2,517	\$ 4,195	\$ 8,390	\$ 5.90
Land Taxes	\$ 3.29	\$ 165	\$ 658	\$ 987	\$ 1,645	\$ 3,290	\$ 2.31
Farm Licenses & Insurance	\$ 4.68	\$ 234	\$ 936	\$ 1,404	\$ 2,340	\$ 4,680	\$ 3.29
RFID Tags	\$ 6.08	\$ 304	\$ 1,216	\$ 1,824	\$ 3,040	\$ 6,080	\$ 3.80
Shearing	\$ 6.97	\$ 349	\$ 1,394	\$ 2,091	\$ 3,485	\$ 6,970	\$ 4.90
Vet Expenses	\$ 4.96	\$ 248	\$ 992	\$ 1,488	\$ 2,480	\$ 4,960	\$ 3.49
Utilities - Heating, Power, Phone	\$ 15.29	\$ 765	\$ 3,058	\$ 4,587	\$ 7,645	\$ 15,290	\$ 10.74
Professional Fees	\$ 2.74	\$ 137	\$ 548	\$ 822	\$ 1,370	\$ 2,740	\$ 1.93
Selling Fees	\$ 2.14	\$ 107	\$ 428	\$ 642	\$ 1,070	\$ 2,140	\$ 1.50
Dog Food	\$ 8.64	\$ 432	\$ 1,728	\$ 2,592	\$ 4,320	\$ 8,640	\$ 6.07
Total Operating Expenses	\$ 84.00	\$ 4,200	\$ 15,266	\$ 22,899	\$ 38,165	\$ 76,330	\$ 53.17
	\$ cost/ewe						\$ cost/lamb
Labour Expenses							
Paid	\$ 6.43	\$ 480	\$ 1,918	\$ 2,877	\$ 3,596	\$ 4,316	\$ 4.52
UnPaid	\$ 102.90	\$ 7,671	\$ 30,684	\$ 46,026	\$ 57,533	\$ 69,039	\$ 72.29
Total Labour Costs	\$ 109.34	\$ 8,151	\$ 32,602	\$ 48,903	\$ 61,129	\$ 73,355	\$ 76.81
Total Variable Expenses	\$ 269.03	\$ 16,135	\$ 63,006	\$ 94,509	\$ 137,139	\$ 225,375	\$ 183.17
Contribution Margin	-\$ 23.87	-\$ 3,904	-\$ 13,921	-\$ 20,962	-\$ 14,507	\$ 19,729	-\$ 10.93
	\$ cost/ewe						\$ cost/lamb
Capital Expenses							
Operating Interest	\$ 41.10	\$ 2,055	\$ 8,220	\$ 12,330	\$ 20,550	\$ 41,100	\$ 28.88
Office Depreciation	\$ 1.22	\$ 61	\$ 244	\$ 366	\$ 610	\$ 1,220	\$ 0.86
Depreciation - Buildings	\$ 26.10	\$ 1,305	\$ 5,220	\$ 7,830	\$ 13,050	\$ 26,100	\$ 18.34
Depreciation - Machinery	\$ 23.67	\$ 1,184	\$ 4,734	\$ 7,101	\$ 11,835	\$ 23,670	\$ 16.63
Capital Expenses	\$ 92.09	\$ 4,605	\$ 18,418	\$ 27,627	\$ 46,045	\$ 92,090	\$ 64.72
Gross Margin	\$ 37.94	\$ 1,712	\$ 8,543	\$ 12,734	\$ 22,476	\$ 47,668	\$ 32.48
Net Margin	-\$ 13.05	-\$ 837.50	-\$ 1,655.00	-\$ 2,563.00	-\$ 3,019.25	-\$ 3,322.50	-\$ 3.35



Predator Control

Predator control, specifically coyotes, is expensive, however, if left unchecked, predatory losses can be costly. For best control, a multimodal approach is optimal. Dogs should be used as primary control with a best management practice of 1 dog per 250 ewes; however, this can vary based on topography and the experience/age of the dog. In addition, llamas and/or donkeys are also used as they will aid in keeping predators away from the sheep/lambs. Good dogs can cost between \$500 — \$1000, depending on amount of training. This is not an insignificant cost and should be included in capital budgeting along with the cost of dog food, veterinary and shelter. These are large dogs and will eat a minimum of \$500 of food each per year.



Start-up Capital Costs

Start-up costs depend on the resources available to each operation. Recommendation is to minimize capital expenditures until management practices are proven and predatory control is adequate to ensure enough saleable lambs will be available to cover costs. Each operation should analyze their situation to determine what costs are relevant. A capital budget should be developed to ensure that the requirements for predatory control are met to minimize death loss.

Producers, who were interviewed, provided the following suggestions on equipment and buildings that would be required to start an operation. Costs estimates are based on new or good quality used equipment. This scenario also assumes that good quality hay will be purchased rather than grown. If growing own feed, the operation will require additional haying tools.

Capital Requirements	Cost
80 Horsepower Tractor - capable of lifting 1500 pound bales	\$30,000
Night Pen - 10 acre field built to keep out predators	\$5,000
Pickup Truck - big enough to pull a small stock trailer	\$25,000
Stock Trailer - size dependent on the quantity to be hauled	\$10,000
Flatdeck Trailer to carry supplies	\$7,500
Small Calf Shelters - to keep lambs dry during storms	\$3,000
Dog(s) - for predator control	\$1,000
Hay Feeders	\$1,000
Total Capital Investment	\$82,500



Sensitivity Analysis - Death Loss and Price

Sensitivity analysis is used to assess the change in gross margin (return over direct costs) from changes in death loss and price. The table below shows the per ewe gross margin change with a Base of a 300 flock sheep ranch. The following table is for a sheep operation that sells feeder lambs through an auction mart.

Feeder Lamb							
	% INCREASE DEATH LOSS			BASE	% DECREASE DEATH LOSS		
	3%	2%	1%	0%	-1%	-2%	-3%
Number of Saleable Lambs	412	417	422	427	432	437	442
Sale Price(\$/lb)							
\$2.10	10.66	13.11	15.56	18.01	20.46	22.91	25.36
\$2.15	15.47	17.98	20.48	22.99	25.50	28.01	30.52
\$2.20	20.27	22.84	25.41	27.97	30.54	33.11	35.67
\$2.25	25.08	27.71	30.33	32.96	35.58	38.21	40.83
\$2.30	29.89	32.57	35.25	37.94	40.62	43.30	45.99
\$2.35	34.69	37.44	40.18	42.92	45.66	48.40	51.14
\$2.40	39.50	42.30	45.10	47.90	50.70	53.50	56.30
\$2.45	44.31	47.17	50.02	52.88	55.74	58.60	61.46
\$2.50	49.11	52.03	54.95	57.86	60.78	63.70	66.61

Sensitivity analysis is used to assess the change in Gross Margin (return over direct costs) from changes in death loss and price. The table below shows the per ewe gross margin change with a Base of a 300 flock sheep ranch. The following table is for a sheep operation that sells market lambs through a meat processing plant.

Market Lamb							
	% INCREASE DEATH LOSS			BASE	% DECREASE DEATH LOSS		
	3%	2%	1%	0%	-1%	-2%	-3%
Number of Saleable Lambs	412	417	422	427	432	437	442
Sale Price(\$/lb)							
\$1.75	121.22	125.01	128.80	132.59	136.38	140.17	143.97
\$1.80	130.14	134.04	137.94	141.84	145.74	149.64	153.54
\$1.85	139.07	143.08	147.09	151.09	155.10	159.11	163.12
\$1.90	148.00	152.11	156.23	160.35	164.46	168.58	172.70
\$1.95	156.92	161.15	165.37	169.60	173.82	178.05	182.27
\$2.00	165.85	170.18	174.52	178.85	183.18	187.52	191.85
\$2.05	174.78	179.22	183.66	188.10	192.54	196.98	201.43
\$2.10	183.70	188.25	192.80	197.35	201.90	206.45	211.00
\$2.15	192.63	197.29	201.95	206.60	211.26	215.92	220.58



Investment Analysis—Business Planning

Whole Farm Business Plan

It is recommended that interested producers develop a whole farm business plan before investing in a farm operation. This plan should evaluate all aspects from production, marketing, animal health and predator control for death loss. Questions to ask in this process include:

- What building infrastructure is required?
- What equipment purchases will be required?
- How will predators be controlled to decrease death loss?
- Where will lambs be marketed?
- Will they be sold as feeder or market lambs?
- Where ewes be sourced for start-up? Auction culls, flock sell off, etc.
- Is there a good source of high quality feed?
- What costs are pertinent to your operation?
- Are my margins positive?
- If margins are negative, what methods can improve them?
- Is it economically and financially viable?

The BC Ministry of Agriculture's Farm Business Advisory Services Program provides support for farm business planning.



Risk Factors

This budget has been prepared based on information provided from producers, located in the BC Peace River Region, who are using good management and production practices.

Various factors impact the amount of saleable lambs in any given year. Attention needs to be given to animal health issues, weather related protection of animals, marketing of the animals, and predatory control. Other specific risks may be identified on each ranch.

It is important to assess the assumptions used in this budget against your specific farm situation and expectations. Both external and internal risk factors should be assessed in terms of probability and impact. In particular, managing risks with high probability and high impact will be critical to meeting production and revenue projections and associated farm profitability.

One way of assessing risks for your farm is to categorize risks into production, market, financial, human or policy areas. Then address each area of risk. Decide if the risk is a high or low possibility, the potential impact on your farm and then develop a strategy to mitigate that risk. Be sure all members of your operation are knowledgeable of the risk considerations.

For additional resources on managing risk and information about government risk management programs, contact the BC Ministry of Agriculture.