Northern beef case study

MLA Cost of Production

This case study outlines how a northern beef producer would calculate their cost of production for beef, using the MLA Cost of Production calculator.

The northern beef herd used in this case study is described in below.

Table 1: Profile of the northern beef herd used in this case study

Heifer and adult cow numbers	3,000
Herd structure	Self-replacing, continuous joining
Target market	400 kg feeder

Trading Details

When in the 'Trading Details' tab you will need to navigate your way to the 'Cattle' section if you are calculating the cost of production of multiple livestock enterprises at once. The 'Cattle' section of the Cost of Production tool captures any production and income associated with your business's beef herd.

Producers are able to calculate their cost of production for any 12-month period that they wish. There are two considerations when choosing a suitable period:

- choose a period when livestock numbers are known in the opening and/or closing inventories
- choose a period when expense data is readily available from a chart of accounts (this often coincides with quarterly Business Activity Statement (BAS) or end-of-financial year tax reporting).

It is important to pay close attention to livestock age brackets. To do this, ensure that inventory numbers contain only the livestock age groups they represent. This ensures that the value of stock held within the herd is captured as the animals grow. Table 2 shows the age brackets associates with each stock class.

Table 2: Livestock categories and corresponding age brackets for inclusion in calculator

Stock class	Age bracket
Cows	> 2 years
Calves	0–6 months
Weaners	7–12 months
Heifers	1–2 years
Steers 1 yr	1–2 years
Steers 2 yr	> 2 years
Bulls	> 2 years

If calving occurs close to the end of the year being analysed and numbers are not yet known, it is recommended to leave them out of the 'Calves' closing numbers. Once the calves are marked or weaned and numbers are known, they can then be included in 'Calves' or 'Weaners' inventory values.

Since there is no livestock category for mickey bulls, it is recommended to include them with steers, depending on their age.

Table 3 describes the livestock flow for the northern beef case study. This table contains the opening and closing livestock inventories, as in the cattle cost of production tool, plus four additional sections that producers may use to help reconcile their own livestock flow. The four additional sections are:

1. Purchases and transfers (internal transfers between enterprises)
2. Natural increase (calves marked)
3. Sales and transfers (internal transfers between enterprises)
4. Deaths.

Transfers refer to the transfer of cattle between different herds or properties within the same business if their costs of production are to be analysed separately. Otherwise, producers are able to amalgamate herds to generate a whole-business beef cost of production.

As in the cost of production calculator, it is not necessary to transfer cattle between age categories. However, it is necessary to move carry-over livestock up age categories each year to capture their value.

In this case study, the herd structure is stable, with no changes between the opening and closing inventory. There are 2,600 cows (> 2 years) in the opening livestock inventory. Throughout the year, 370 cows are sold, 30 die, and 400 heifers (1–2 years) from the opening inventory move up an age bracket, leaving 2,600 cows in the closing inventory.

The 2,100 calves (0–6 months) from natural increase move up an age bracket to weaners (7–12 months) by the end of the year. This movement is represented in the weaner closing numbers.

Of the 2,100 weaners in the opening numbers, 1,040 are sold as steers (1–2 years) and 10 steers die, while 645 are sold as heifers and five heifers die. The remaining 400 heifers are kept as replacements and joined for the following year, and are represented in the heifer closing inventory.

There are no steers kept beyond 2 years of age, hence none are represented in the inventory. There are 75 bulls in the opening inventory; 20 new bulls are purchased, 15 are sold and five die, leaving 75 bulls in the closing inventory.

Table 3: Illustration of livestock reconciliation for financial year reconciliation

	Opening	Purchases and transfers	Natural increase (calves marked)	Sales and transfers	Deaths	Closing
Cows	2,600	0	0	370	30	2,600
Calves	0	0	2,100	0	0	0
Weaners	2,100	0	0	0	0	2,100
Heifers	400	0	0	645	5	400
Steers 1 yr	0	0	0	1,040	10	0
Steers 2 yr	0	0	0	0	0	0
Bulls	75	20	0	15	5	75
Total	5,175 +	20 +	2,100 −	2,070 −	50 =	5,175

Table 4 outlines the sales and purchases for the northern beef herd case study. The cow, heifer, steer and bull sales accrue to 828,000 kg lwt and $1,490,400. Twenty bulls were purchased for $51,200. Livestock sales receipts, including sale values and weights, will help complete this section of the tool.

Table 4: Description of sales and purchases

Sales					
Livestock category	Number sold	Liveweight (kg/hd)*	Sale value ($/kg lwt)**	Total liveweight sold (kg)	Total sales
Cows	370	450	$1.20	166,500	$199,800
Heifers	645	364	$1.90	234,780	$446,082
Steers 1 yr	1,040	400	$2.00	416,000	$833,798
Bulls	15	715	$1.00	10,720	$10,720
			Total	828,000	$1,490,400

Purchases					
Livestock category	Number purchased	Liveweight (kg/hd)*	Purchase value ($/kg lwt)**	Total liveweight purchased (kg)	Total purchases
Bulls	20	800	$3.20	16,000	$51,200
			Total	16,000	$51,200

*Rounded to the nearest kg. ** Rounded to the nearest cent.

Figure 1 illustrates how this section of the cost of production tool should be completed for the case study herd.

Figure 1: Example of how to complete the 'Trading' section

Expenses

Direct cattle expenses

In the 'Expenses' tab, users can enter the expenses that are directly attributable to the beef herd. All expenses should be GST free.

If the Cost of Production tool does not have a particular expense category you need, you can click '+ Add expense' and enter it yourself. In this case study, direct expenses attributable to the beef herd totalled $242,000 (Figure 2).

Purchase receipts and the tax chart from the business's accounts can be used to help complete this section of the tool. When the tax records do not allow for expenses to be apportioned easily, then use common sense to arrive at the appropriate expenses, but aim to create more categories for the subsequent years to allow more accurate allocation. Bookkeepers and accountants should be able to do this easily.

Note that when there are multiple enterprises, and records do not allow expenses to be allocated easily between enterprises, using the tool for all enterprises helps the user to be confident that allocations are sensible. If one enterprise is allocated a disproportionate amount of the expenses, it will look wrong in the cost of production outcome, and the user can go back and reallocate expenses until the outcomes make sense.

Figure 2: Example of how to enter direct expenses

Supplement expenses

When in the 'Expenses' tab, users need to click 'Expand' on the 'Supplement expenses' section to enter the cost of any supplements fed to the northern beef herd. All expenses should be GST free.

Supplementary feeding for maintenance can be divided among all livestock enterprises, even if it only occurred for one enterprise on the basis that feeding that enterprise meant the other did not have to be fed. This removes bias that occurs if one enterprise is preferentially fed over another.

When production feeding is occurring (i.e. to put weight on weaners) or there are no other enterprises, the cost should be allocated directly to the beef herd. Also, if the supplement fed is urea (increasing feed utilisation rather than substituting energy obtained from pasture), then this is a direct cost to the beef herd.

Supplementary feed costs should reflect the market values of the supplement at the time it was fed out, whether it was purchased off farm or grown on farm. Supplementary feed purchase receipts should be used to help complete this section. In this beef herd case study, 155 tonnes of dry urea lick was fed out to the herd, accruing a cost of $93,000 (Figure 3).

Figure 3: Example of how to enter beef supplement expenses

Labour and overheads

Labour

In the 'Labour' section of the 'Labour and overheads' tab, users are able to allocate labour expenses to the various livestock enterprises. All expenses should be GST free.

Capital labour should not be included in the calculation. Significant capital labour is usually associated with infrastructure improvements. Of the non-capital labour, some will be attributable directly to enterprise-related activities, such as calf marking and weaning. The amount used is easy to establish by adding an estimate of the number of labour days associated with each activity.

The remaining labour will be spent in general adminstration, pasture maintenance, general monitoring, and repairs and maintenance. It is harder to clearly distinguish which enterprise this labour is servicing, so these remaining labour costs can simply be pro-rated across the enterprises, based on their relative dry sheep equivalent (DSE) contribution.

The labour of owner-operators and additional family members needs to be assigned a value in the Cost of Production tool, net of non-cash benefits. Although there is a range of suitable salaries for both roles, values of $70,000 and $50,000 are recommended for owner-operators and family members, respectively.

A full labour unit constitutes five labour days per week for 48 weeks, totalling 240 labour days per year. Any less than this is considered part-time labour, and would be expressed as a proportion of a full-time unit. For example, if the owner/operator works for three days per week, this constitutes 0.6 labour units. To calculate the cost of this labour unit to the enterprise, the value of the labour unit is multiplied by the number of labour units it represents. For example, if the labour of the owner/operator in this scenario is valued at $70,000, the cost to the enterprise would be $70,000 multiplied by 0.6 labour units, which equals $42,000.

The Cost of Production tool allows users to add permanent and casual labour units by clicking the '+' button. It also allows users to alter the distribution of each labour unit among the enterprises. In this business case study, as there are no other enterprises, 100% of the labour is attributed to the beef herd (Figure 4).

There is a full-time owner/operator in the case study, whose labour is valued at $70,000. There is an additional family member whose labour is valued at $50,000, and a permanent employee on a salary of $60,000. There is no casual labour, as this is accounted for in contract expenses. This brings total labour costs to $180,000.

Figure 4: Example of how to allocate labour expenses

Overheads

When in the 'Labour and overheads' tab, users need to click 'Expand' on the 'Overheads' section to enter the business overhead expenses into the tool. All expenses should be GST free.

Capital expenditure should not be included in overhead expenses. Capital items are those that have a useful life beyond the current year, and are purchased in the interest of future productivity or efficiency. Because there is room for interpretation of capital and non-capital expenditure, some capital items are treated as non-capital items for taxation reasons. It is recommended that true capital expenditure is extracted from financial records to provide a better indication of the cost of production. Capital expenditure may include that used for new fencing, road building, installing new water systems or raising soil fertility levels.

Overhead expenses are those that are difficult to attribute to any one enterprise, and generally don't correspond as closely with the number of livestock run as direct expenses. The overhead expense categories provide an indication of what these expenses will be, and users can add their own overhead expense categories by clicking on the 'Add overhead' box.

Users can allocate overhead expenses to the enterprises either as a whole, or individually by ticking the 'Edit individual overhead allocations' tick box.

To allocate expenses as a whole, they may be pro-rated to enterprises based on their contribution to annual average adult equivalents. Alternatively, overhead expenses may be entered individually by ticking the 'Edit individual overhead allocations' tick box. To allocate overhead expenses individually, other measures such as the enterprises contribution to total income or relative use of labour resources will also work. Table 5 shows a suggestion of how to best allocate overheads individually.

Table 5: Overhead cost categories and suggested allocations

Overhead cost category	Allocation basis
Repairs and maintenance (sheds, yards, fences, land)	Adult equivalents
Repairs and maintenance (plant and equipment)	Labour
Depreciation	Labour
Admin expenses	Income
Electricity and gas	Labour
Insurance	Income
Pasture costs	Adult equivalents
Rates and rents	Adult equivalents
Fuel and oil	Labour

In the case study, there are no other enterprises so 100% of overheads are attributed to the beef herd. Total overhead expenses for the business are $391,000 (Figure 5).

Figure 5: Example of how to allocate cattle overhead expenses
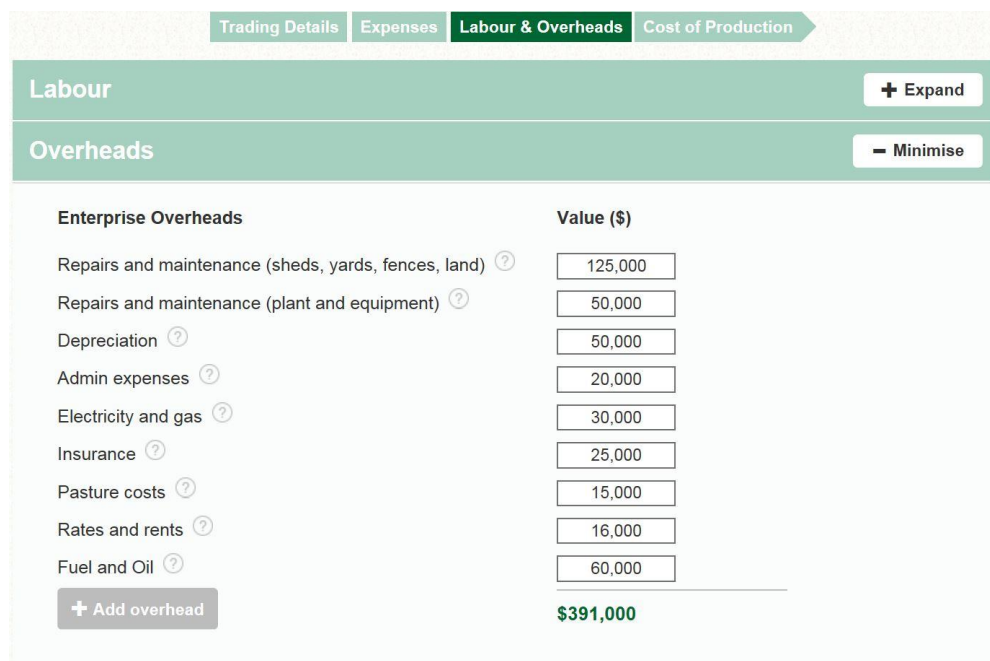
Cost of Production

The 'Cost of Production' tab provides users with a breakdown of production, income and expenses for all enterprises, based on the information provided.

The first pane in this tab ('Enterprise') shows the relative income, expenses and cost of production for the three enterprises (cattle, sheep and goats). Figure 6 shows income, expenses and cost of production for cattle only.

Figure 6: The 'Enterprise' pane shows relative income, expenses, cost of production

The 'Cattle' pane shows more detail and helps users better understand the cost of production of their beef enterprise (Figure 7). Beef cost of production is calculated as total cost of beef production divided by net kilograms of beef liveweight sold. The tool also provides the margin between beef price received ($/kg lwt) and beef cost of production ($/kg lwt).

If either the beef cost of production or beef margin seem illogical, use the income, expense and production data from higher in the pane to help diagnose where the error may be. Return to the section that seems to be the source of the error and check the inputs to ensure they reflect your beef production system.

Figure 7: Cost of production is $1.12/kg lwt, leaving a margin of $0.66/kg lwt sold

CATTLE

Income	$1,439,200	
Direct expenses	$335,000	
Overheads	$391,000	
Labour costs	$180,000	
Total Cost of Production ($)	$906,000	
Total kg produced (lwt)	812,000kg	
Cost of Production ($/kg lwt)	$1.12	
Income ($/kg lwt)	$1.77	
Margin ($/kg lwt sold)	$0.66	

Income vs. Expenses

Industry Benchmark

$1.12 Lwt

$0.50 Lwt
Lowest CoP

$1.75

$3.00 Lwt
Highest CoP