Factsheet 1

MEAT & LIVESTOCK AUSTRALIA

Profitability in goat production

Profitability is the key to successful commercial goat enterprises. This factsheet provides important information for all commercial goat producers through explaining the importance of understanding profitability and the role profit plays in determining the long-term economic sustainability of commercial goat enterprises. Central to this is consideration of cost of production as one of the key drivers of profitability that can be influenced by a producer.

Profit underpins good businesses

A successful business could be described as one that provides sufficient profit for the needs of its owners and rewards them adequately for the capital and time invested in the business. What one producer considers an adequate return-on-time and capital may, however, be quite different to another's impression of the same.

A more objective way to define a successful business is to look at what it needs to achieve in the long-term to be economically sustainable; that is, for income to exceed the cost of production so as to generate a return that meets or exceeds its cost of capital. This return-on-capital approach is a fundamental principle of capital investment.

Where return-on-capital is not a priority, such as where real estate values are over inflated from a primary production perspective, this could arguably be omitted where all of the following can be satisfied:

1. Fund all current operating expenses and operational capital expenditure through internally generated working capital.

2. Remunerate its owners adequately, at least to the standard of the average wage earner.

3. Have the capacity to repay debt principal in a timely manner (suggested <10yrs).

4. Maintain a 'safe' level of equity (suggested 85% equity or greater).

5. Provide for the independent retirement of the existing owners. If the owners have been adequately remunerated through their working life (as per number 2), the business should not need to fund their retirement and this criteria is redundant. This point is also only valid if the business is to continue beyond the current generation and not be sold to fund retirement.

Key points

- Profit underpins good commercial businesses.
- Operating profit is a result of the management and marketing decisions made across the production year and is directly influenced by enterprise gross margins.
- Understanding enterprise gross margins allows management decisions to be made that will influence the profitability of the business.
- Cost of production is one of the most critical drivers of profitability that can be directly influenced by producers.
- Good record keeping is critical to a meaningful analysis of cost of production.

6. Be able to survive business succession with the business and the family remaining intact. This point is only valid if the business is to continue beyond the current generation.

7. Survive and prosper in the long-term without the erosion of environmental capital (environmental sustainability).

Calculating profit

Profit is the annual gross income less the annual costs, or what is left over after covering the costs of running a goat operation for a production year. This can be expressed in a number of ways depending upon which costs are included or excluded, for example:

Gross margin =	gross farm income – variable costs
Operating profit =	Gross margin – fixed costs
Farm net profit =	Operating profit – finance costs – personal costs – capital costs – tax

The farm gross margin is often made up of enterprise gross margins. A comparison of the gross margins for a range of enterprises can help identify which enterprise or enterprises are most profitable.

Enterprise gross margins are created by identifying the enterprise's income and the variable costs involved in generating that income. Gross margin can be expressed in a number of ways but generally refer to the most limiting resource, for example dollars per hectare ($/ha) or dollars per dry sheep equivalent ($/DSE). The use of a uniform comparator across enterprises, for example $/DSE, is important as it allows the relative profitability of different enterprises to be compared.

Operating profit is calculated by deducting the fixed costs from the farm total gross margin. Fixed costs don't vary greatly, so increasing operating profit relies on generating a higher farm gross margin which is often best achieved by minimising the cost of production.

Once the operating profit is known, other costs can be deducted from this to calculate the farm net profit.

Profitability

Profit is a number which, while important, can be meaningless without reference to the amount of assets (capital) used to generate that profit. Once profit is known, it is useful to consider this as a percentage in terms of profitability.

For example, if a business had $1 million of assets, then a $100,000 profit would mean profitability of 10% ($100,000/$1,000,000=10%) which is good. If they made the profit from $10 million of assets, then their profitability is only 1% ($100,000/$10,000,000=1%).

The profitability figure can be compared to alternative uses of that capital and it is also important when assessing if a business is meeting its cost of capital (for example interest repayments).

Profitability and wealth creation

The profitability of a business has significant implications for the wealth of owners, even to those who indicate that return-on-capital is not important to them. A business achieving a return of 2% a year (after tax with all profits reinvested) will take 35 years to double in size, whereas a business achieving a 7.2% return will double in just 10 years. The second example is far more favourable when considering wealth creation.

Meat goat income

In considering profit within a goatmeat enterprise, income and expenses must be considered.

The income from a goatmeat enterprise comes from goat sales as well as the changes in livestock inventory across the production year. The income is based on the quantity of product produced and the price received for that product.

Enterprise income = Quantity of product produced (kg)
x Price/unit of product ($/kg)

- **Quantity of product sold**

The quantity of goatmeat sold can be measured in kilograms of goatmeat produced per hectare (kg/ha). This is directly related to the number of animals that can be stocked sustainably and their weight gain across the production year.

Stocking rates and weight gain relate to kg/ha

Stocking rate (short-term; the number of livestock in a paddock at any given time) and carrying capacity (long-term; the number of animals that can be sustained on an area of land) are crucial drivers of profitability. The more animals grazed and the higher their weight gain, the greater the potential quantity of meat produced (kg/ha) and the more product fixed costs can be offset against.

It is important, however, to optimise rather than necessarily maximise stocking rate. Local factors such as ground cover and total grazing pressure must be considered in determining the carrying capacity of the land and stocking rates within a goatmeat enterprise.

Other important factors which influence the quantity of product sold and enterprise throughput include weight gain, breeding doe fertility to maximise pregnancy rates, kidding rates and kid survival rates.

The more animals grazed and the higher their weight gain, the greater the potential quantity of meat produced

- **Price per kilogram (market price)**

The price received per unit of product sold has a direct impact on income in a meat goat enterprise. The higher the price per unit of product, the greater potential for increased enterprise income.

For example, Table 1 shows that a $10/head price increase (an extra $0.65/kg carcase weight (cwt) on a 15kg carcase) increases the gross margin return by $4.42/DSE. Across the 550 head sold (550 DSE) this adds an extra $2,431 profit to the goat enterprise.

Table 1: Percentage DSE method for allocating labour and overhead costs

	Total	Cattle Breeding	Goats Meat	Sheep Lambs
Dry sheep equivalent (DSE)	7,300	1,387	876	5,037
Enterprise % of DSE		19%	12%	69%
Wages	$36,311	$6,899	$4,357	$25,055
Depreciation	$12,798	$2,432	$1,536	$8,831
R&M structures	$6,642	$1,262	$797	$4,583
R&M plant	$12,899	$2,451	$1,548	$8,900
Insurance	$6,314	$1,200	$758	$4,357
Fuel	$5,520	$1,049	$662	$3,809
Admin	$19,956	$3,792	$2,395	$13,770
Accounting	$8,590	$1,632	$1,031	$5,927
Rates	$18,116	$3,442	$2,174	$12,500
Power	$9,389	$1,784	$1,127	$6,478
Total	$136,535	$25,942	$16,384	$94,209

Cost of production

A major driver of the profitability of grazing enterprises is the cost of production. Producers typically have far more control over the cost of production than other factors such as price and, to a certain extent, the quantity of product produced as this can be subject to environmental circumstances.

In considering the cost of production, all costs associated with producing a kilogram of meat should be considered, including variable and fixed costs. Within multiple enterprise businesses, the proportion of fixed costs attributed to an enterprise must be calculated.

The MLA Cost of Production Calculator is a 'do-it-yourself' tool that allows enterprises to be compared to others and, importantly, for business performance to be compared from year-to-year.

As with all forms of meaningful business analysis, the output from the MLA Cost of Production Calculator is only as good as the quality of the information entered into the calculator. Maintaining good records is fundamental to being able to access the information required to effectively analyse business performance.

MLA Cost of production calculator
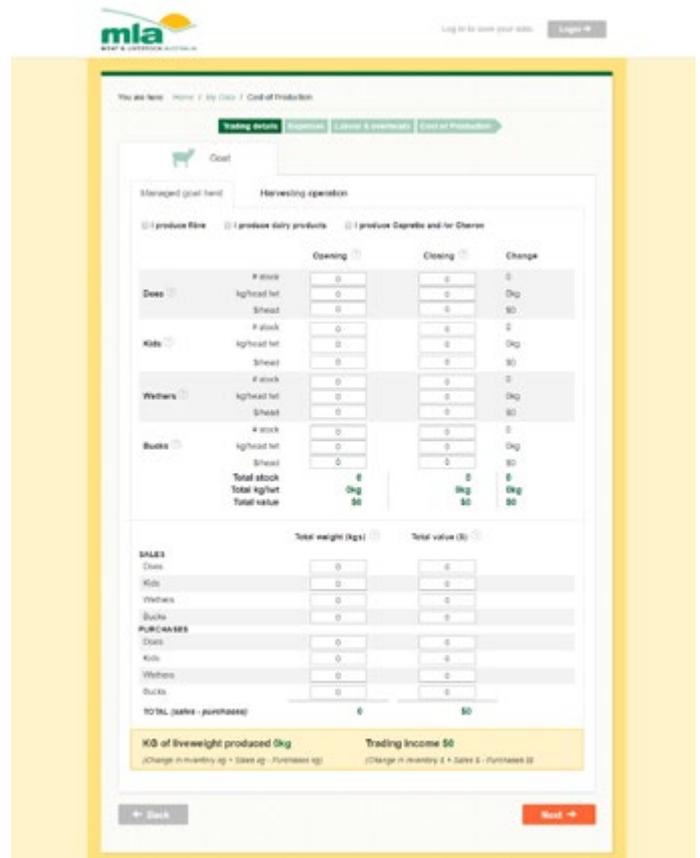
How to use the
MLA Cost of Production Calculator

Step 1

For each enterprise type, indicate the number of animals at the beginning and the end of the calculation period, then add purchases and sales during the year to complete the stock balance. You will also be asked to assign inventory values including average weight for each stock class and $ values.

Step 2

Add in direct expenses and supplement expenses for each enterprise type, then allocate relative values for all overheads and labour costs across your business (in case you have more than one type of livestock). For more information on allocating expenses, read the next sections on variable costs and fixed costs.

Step 3

Determine your cost of production for each enterprise type, its relative value across the whole business, and compare your performance from year to year.

Cost of production provides an indication of the outlay required to produce each kilogram of meat for the enterprise types that are part of your business (cattle, sheep, or goat). Calculating your cost of production is an important step in assessing your performance and efficiency.

Variable costs

It is relatively easy to identify the direct costs of producing and selling goats. These vary with enterprise size and typically include costs for livestock health (drenches, vaccines, tags), purchased or home grown feed, livestock contract services, transport and selling expenses as well as livestock insurance.

Supplementary feeding for maintenance can be divided across all livestock enterprises in the business even if it was only fed to 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.

Supplementary feeding can be divided across all livestock

For example, if you had a managed goat herd that represented 50% of the farm's DSE, then 50% of the managed goat herd's supplementary feeding expense would go to the other livestock enterprise. This is because feeding of the goat herd made more pasture resources available to the other enterprise.

Fixed costs

Fixed costs make a significant contribution to the cost of production but are often harder to recognise and allocate and can be overlooked. These are made up of:

- **Labour costs** - which include both an imputed cost for owner/family labour as well as the cost of paid employees (including salary, superannuation, bonuses and training).
- **Overhead costs** - which include items such as rates, insurance costs, motor vehicle costs, repairs and maintenance and utility costs, such as electricity, as well as lease costs and depreciation.

There are two common methods for allocation of labour and overhead costs:

1. Percentage of DSE method
2. Percentage of gross farm income (GFI) method.

The method used should be the most appropriate for the business. It is important to use the same from year to year so the cost of production results can be compared easily.

Fixed costs can include items such as labour, vehicle costs, insurance, rates, repairs and maintenance

- **Percentage DSE method**

The percentage of DSE is the simplest method to allocate the costs associated with labour and overheads (fixed costs) for a single activity (livestock only) business. This method uses the percentage of total carrying capacity allocated to each livestock enterprise to apportion a percentage of the total farm labour and overhead cost to each enterprise.

For example, a mixed grazing operation of 3,300 breeding ewes for lamb production, 600 breeding does and 100 breeding cows would have a total carrying capacity of 7,300 DSE. The allocation of labour and overhead costs for this business is demonstrated in Table 1 (previous).

- **Percentage GFI method**

The percentage GFI method for allocating labour and overhead costs is best used for businesses running two or more activities (for example, cropping and livestock). This method calculates the percentage of total revenue that each enterprise contributes and apportions the total farm labour and overhead costs on this basis.

For example, a mixed cropping and livestock operation has an annual gross farm income (GFI) of $854,000. This income comes from crops (59%), meat sheep and wool (34%), goats (4%) and cattle (3%) as set out in Table 2.

The percentage GFI method is best used for businesses running two or more activities

Table 2: Percentage GFI method for allocating labour and overhead costs

	Total	Wheat	Barley	Cattle Breeding	Goats Meat	Sheep Lambs
Gross Farm Income (GFI)	$854,000	$333,060	$170,800	$25,620	$34,160	$290,360
Enterprise % of GFI		39%	20%	3%	4%	34%
Wages	$36,311	$14,161	$7,262	$1,089	$1,452	$12,346
Depreciation	$12,798	$4,991	$2,560	$384	$512	$4,351
R&M structures	$6,642	$2,590	$1,328	$199	$266	$2,258
R&M plant	$12,899	$5,031	$2,580	$387	$516	$4,386
Insurance	$6,314	$2,462	$1,263	$189	$253	$2,147
Fuel	$5,520	$2,153	$1,104	$166	$221	$1,877
Admin	$19,956	$7,783	$3,991	$599	$798	$6,785
Accounting	$8,590	$3,350	$1,718	$258	$344	$2,921
Rates	$18,116	$7,065	$3,623	$543	$725	$6,159
Power	$9,389	$3,662	$1,878	$282	$376	$3,192
Total	$136,535	$53,249	$27,307	$4,096	$5,461	$46,422

Analysing an enterprise

The following example relates to a mixed cropping and livestock business running 600 breeding does plus replacements.

- Weaning percentage is 120% meaning 720 kids are weaned and 120 doe weaners are retained as replacement breeders.
- 600 kids sold at 15kg cwt or 33kg live weight (lwt), 115 cull for age (cfa) does sold at 25kg cwt or 55kg lwt, three cfa bucks sold at 36kg cwt or 80kg lwt.
- Total turn-off is 10,500kg cwt or 23,000kg lwt.

Variable costs are $5.10 per breeding doe, supplementary feed costs of $4.15 per breeding doe and share of overhead and labour costs at $22.45 per breeding doe. Total costs are $31.70 per breeding doe or $19,020 in total.

Therefore, the cost of production is $19,020/10,500kg cwt = $1.81/kg cwt. This can also be expressed in terms of live weight as $19,020/23,000kg lwt = $0.83/kg lwt.

Using cost of production to make better decisions

Once the cost of production is known, more informed management decisions can be made, such as those relating to:

1. Which enterprises have a commodity price that is consistently higher than the cost of production and therefore consistently profitable.
2. What impact a range of commodity prices have on the profitability of the enterprise under the known cost structure. This is demonstrated in Table 3 using the example above.

Table 3: Profit of a goat enterprise under different goatmeat prices with a cost of production of $1.81/kg cwt

	Price $/kg cwt (12.1-16kg cwt)	Margin on cost of production (CoP) at $1.81/kg cwt	Profit Margin @ 10,500kg cwt (CoP margin x turn-off kg cwt)
Over-the-hooks (OTH) price (April 2016)	$5.30	$3.49	$36,645
Average OTH price (2014)	$3.00	$1.19	$12,495
Average OTH price (2013-2015)	$3.02	$1.21	$12,705

Based on average over-the-hooks pricing data for goatmeat at the 12.1-16kg cwt range, this business would have been profitable every year since 2013 at a cost of production of $1.81/kg cwt.

How increased productivity will affect cost of production and profit margin

In this example, an increase in productivity in the form of a lift in the weaning rate from 120% to 150% will affect the cost of production through increasing the cost of supplementary feeding as a result of better nutritional management at kidding and joining from $4.15 to $4.80 per breeding doe. Variable costs stay the same at $5.10 per breeding doe and fixed costs remain the same at $22.45 per breeding doe. Total costs are $32.35 per breeding doe or $19,410 in total.

Table 4: Increased production based on an increase in weaning percentage

	At 120% weaned	At 150% weaned
No. kids weaned	720	900
No. replacement breeders retained	120	120
No. kids sold at 15kg cwt	500	780
No. cfa does sold at 25kg cwt	115	115
No. bucks sold at 36kg cwt	3	3
Total turn-off kg cwt	10,483	32,305

The cost of production in this scenario is $19,410/14,600kg cwt = $1.33/kg cwt. This can now be used to assess the profit margin of the enterprise under the same pricing circumstances considered in Table 3, as shown in Table 5.

Table 5: Turn off based on 15-16kg cwt with a $1.33/kg cwt cost of production

Over-the-hooks (OTH) price (April 2016)	$5.30	$3.97	$57,962
Average OTH price (2014)	$3.00	$1.67	$24,382
Average OTH price (2013-2015)	$3.02	$1.69	$24,674

The higher productivity increases the profit margin at all pricing levels by reducing the cost of production. Based on this analysis, the decision to incur the increased cost of supplementary feeding can be justified as the increased production more than offsets this cost, resulting in an overall decrease in the cost of production per kilogram of carcase weight.

Understanding cost of production and other business metrics helps decision making

Profitability is the key to a successful commercial goat enterprise