

final report

Project code: B.GOA.0077
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Date published: November 2013
ISBN: 9781740362160

PUBLISHED BY
Meat & Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

Outcomes of the goat industry cost of production workshops

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Executive summary

1. Participation levels in the Goat Cost of Production workshop series were lower than desirable. Thirty six participants, 60% of the target of sixty, attended workshops in Bendigo, Dubbo, Longreach, Broken Hill, Toowoomba and Perth. Six of these were potential new entrants to the industry. The business-based content of the workshop appears to be less appealing to goat producers than does production-based content.
2. The data collected from participants in the workshops reflects the diversity in the goat industry. The majority of participants manage goats primarily for meat production with a small proportion managing goats for milk and fibre.
3. There appears to be a diversity of drivers for involvement in the industry. Some managers produce goats as their passion or hobby while for others the decision to manage goats is driven by a commercial imperative.
4. There is a diversity of production systems within the sample. In the rangelands, production systems include the opportunistic harvest of wild unconstrained (unfenced) goats, the harvest of constrained rangelands goats and the trading of constrained immature (<12 months) rangelands goats. In the higher rainfall areas most participants generate the majority of their income from chevon goat meat (4-12 month old goats) with a few focusing on capretto (0-3 month old goats) production. Several seed stock producers were also included in the sample.
5. Research and development and extension needs differ between participants as a result of the diversity in systems. This presents challenges for service providers. For example, there appeared to be a lack of understanding of the more rudimentary production based issues such as matching feed demand to feed supply in the high rainfall area. This was not exhibited to the same extent in the rangelands environments.
6. Twelve of thirty participants currently managing goats generated a profit while the remainder generated a loss despite high goat meat prices and good rainfall in the majority of locations.
7. There was significant variation in cost of production between participants in each location with positive margins being generated by at least one participant at each location. This suggests that there is opportunity for those participants with a high cost of production to improve, regardless of locality.
8. Labour costs account for approximately 25% of total costs. There is significant opportunity for lowering cost of production through improvements in labour efficiency particularly in the rangelands. Analysis of the returns on investment in technologies improving mustering, handling and water management efficiencies in the rangelands is recommended.
9. Cost of production is a useful tool for business planning but there are limitations to its use. Further, the value is in the interpretation of the data. Users of the tool, or their advisers, need to establish whether it is possible to lower CoP with improvements in production or maintaining production from a lower cost base. This requires an understanding of the production and financial aspects of the farm business.

10. There are limitations to the use of CoP as a business planning tool. The complexity of farm business management means that strategic planning usually requires more detailed analysis than cost of production. A number of analyses including whole farm production and financial analysis, partial budgeting and investment analysis are usually required depending on the questions being investigated.
11. The data collected from the Goat Cost of Production workshops reflects a single year only. Interpretation of the data should therefore be treated with caution. With the exception of Western Australia, historically high rainfall was received in the year of data collection and prices were also historically high.

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1. Background

The aim of this report, written by John Francis, director of Holmes Sackett, is to highlight the outcomes of a series of MLA funded Cost of Production workshops run for goat producers.

2. Recommendations

The lack of a financial commitment to the workshop resulted in an apparent lack of commitment. A number of registered participants cancelled within one to two days of the workshop commencing. I recommend in future that, at the very least, participants be charged a nominal registration fee. The fee should be non-refundable for cancellations within 14 days of commencement of the workshop. This would hopefully improve the level of participant commitment to the workshop after registering.

There appears to be a lower level of producer interest in business related topics relative to production related topics. I recommend that, if possible, the cost of production workshop should be linked to a production focused topic in an attempt to entice producers and increase uptake. It is also possible that a change in title could increase participation.

There was an apparent lack of understanding of the production based issues that drive profitability in the higher rainfall areas. Examples of issues where there was apparently a poor understanding include stocking rate, matching feed demand to feed supply, time of kidding and time of sales. I recommend that investment in extension of these principles in the high rainfall goat production areas become a priority.

There was a poor understanding of the extent of the cost or opportunity cost of labour in goat production businesses. There is vast opportunity to improve labour efficiency in the high rainfall areas and the rangelands production zones. I recommend goat-enterprise specific investment into labour efficiency research in the goat industry. Benchmarks for levels of labour efficiency in rangelands specific production systems and higher rainfall production systems should be developed to provide a guide for a target cost of labour.

There was an apparent lack of understanding of the concept of cost of production in dollars per kilogram of dressed weight. Development of a tool modelling a typical production system (one for the rangelands and one for the higher rainfall zones) and outlining costs in gross terms or dollars per doe/nanny would assist in participants understanding of cost of production. I recommend the development of the tool.

3. Participation

Thirty goat producers and six potential goat producers participated in six workshops across Australia. Participation levels in the Cost of Production workshops are shown in

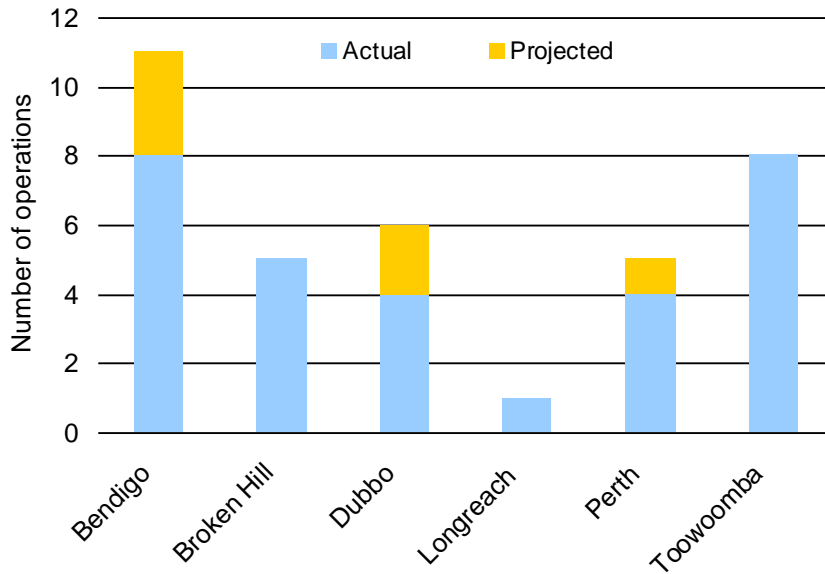


Figure 1. Participation levels varied from 11 participants at Bendigo in Victoria to 1 participant in Longreach Queensland.

Of the 36 participants 34 were producing, or intending to produce, goats or sires for meat production, one was producing goats for milk production and one was producing goats for fibre production.

Some participants were not currently managing goat herds but proposed to in the future. The cost of production of these participants has been classified as “projected” in this analysis. Those producers who currently manage goat production systems have been classified as “actual” in this analysis. The majority of the analyses in this report focus on those participants with actual, rather than projected, cost of production. Participants with actual CoP results accounted for 83% of the total.

Participants who were looking to enter the goat industry (projected) found the cost of production workshops very useful. Several of these participants commented that the workshops not only provided a valuable networking opportunity with established industry participants but also that it allowed them to understand the true cost of running a goat enterprise.

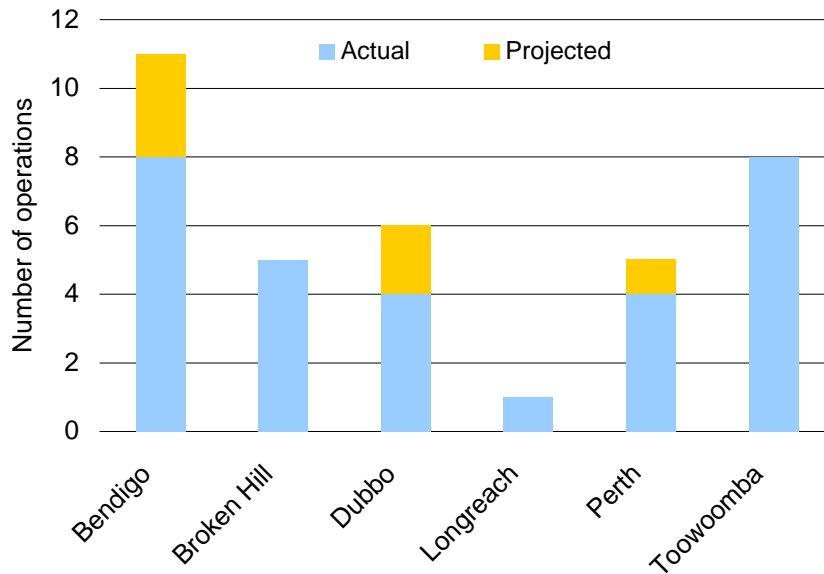


Figure 1 Participation levels varied between locations

4. Income generation

The CoP methodology allocates expenses of different components of goat production based on the percentage of income generated. Different components of production include:

- adult goat meat
- capretto goat meat (kid meat less than 3 months of age)
- chevon goat meat (kid meat greater than 3 months but less than 12 months of age)
- fibre
- milk

Figure 2 shows that, on average, of all participants' production (proposed and actual) chevon and capretto accounted for over 60% of the gross income with adult goat meat accounting for a further 30%. Fibre accounted for less than 1% of gross income while milk accounted for approximately 5%. The majority of participants produced adult goat meat and chevon goat meat while less than 10 participants produced capretto. Two and three participants produced fibre and milk respectively. The number of participants with production from the different components of the enterprise is indicated in Figure 2 by the orange dots which are read from the right hand axis of the graph.

Adult goat meat sales represent 88% of total meat production in this data set while chevon and capretto represent 11% and 1% respectively. This reflects the fact that a small number of rangeland producers produce a large proportion of the total production. Most of these sales are classified as adult goat meat sales.

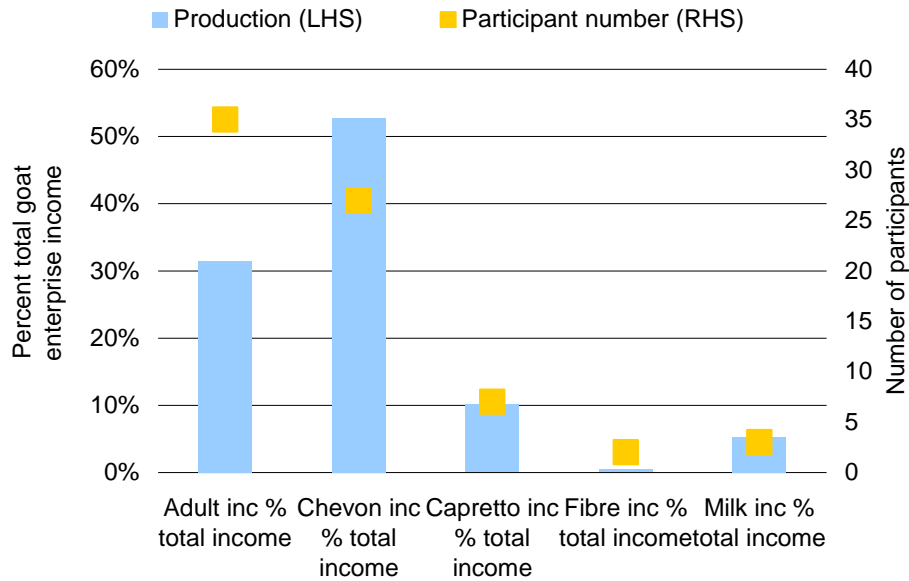


Figure 2 Chevon and capretto production account for over 60% of gross income

Figure 3 shows the individual participant breakdown of income generation for different components of the goat enterprise. The methodology allows for negative income to be generated in some cases. This occurs as a result of high inventory sales or a significant loss in the value of inventory. Losses in income are offset by other components of the enterprise being allocated a proportion of the loss as additional income thereby giving a net income of 100%.

The majority of producers derive income from chevon and adult goat meat sales. A small number of participants produce capretto while very few produce milk and fibre. Rangeland wild harvested production systems are assumed to produce 100% of the goat meat production from adult goat meat sales in this analysis. While a percentage of the total goat sales are attributable to young goat meat production this is not recorded thus all sales have been classified as coming from adult goat meat.

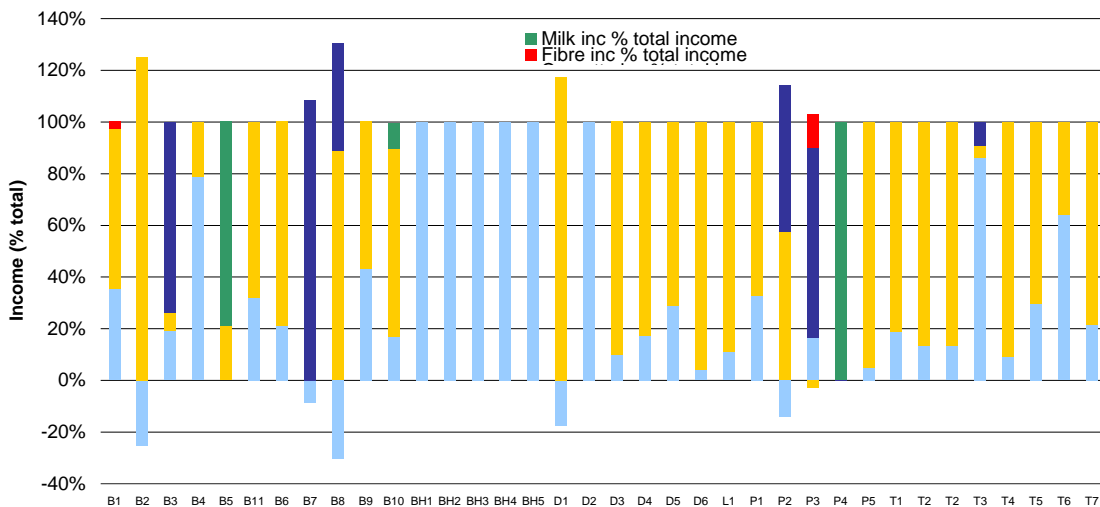


Figure 3 The majority of participants derive income from chevon production

5. Cost of production by location

The average of the pooled data of those participants with actual enterprise cost of production is shown in Figure 4. The weighted average cost of production of all meat produced has been generated by multiplying the cost of production for each component of production by the percentage of total meat production represented by that component. The weighted average price received of all meat produced has been generated by multiplying the price received for each component of production by the percentage of total meat production represented by that component.

The average is made up of low cost producers, high cost producers and everything in between. The results show that, on average the cost of production is well above the price received for all locations except Broken Hill and Longreach.

The average cost of production at Bendigo exceeds the upper limit on the graph by a further \$20 per kilogram dressed weight.

To some extent these results reflect the fact that some participants treat their goat production systems as a hobby. These producers are passionate about goats and typically place very little value on the time taken to manage their goats. The cost of production methodology allocates a standard value for labour to all participants. Thus those participants who are inefficient with their time have an excessively high cost of production which increases the average cost of production.

The high price received for Bendigo, Perth and Toowoomba represent the fact that there were a greater proportion of seed stock producer participants at these locations relative to the remaining locations.

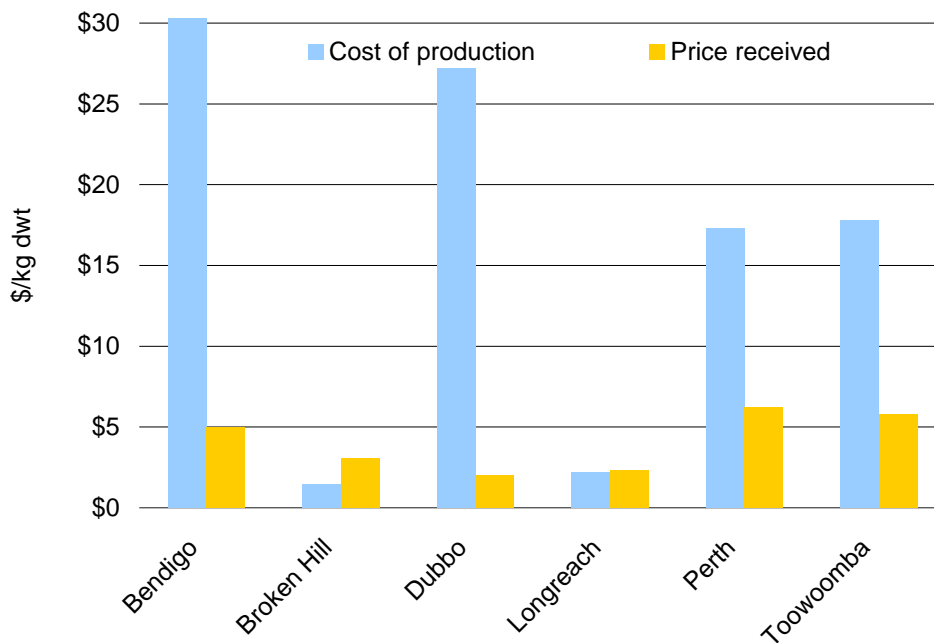


Figure 4 On average price received exceeded cost of production at Broken Hill and Longreach

6. Average and range in cost of production by category by location

The average and range in cost of production by expense category by location is provided in the series of graphs following. The average is shown as the light blue bar while the range is demonstrated by the extent of the dark blue line running vertically through the average.

Figure 5 shows that direct expenses varied by over \$20 per kilogram of dressed weight sold at Bendigo and by approximately \$8 per kilogram dressed weight sold at Perth. Direct expenses were lowest at Broken Hill and Longreach. The 2011 year was a particularly wet year where additional animal health treatments were required for internal parasite control in high rainfall environments. Little to no animal health treatments occur in the rangelands environments.

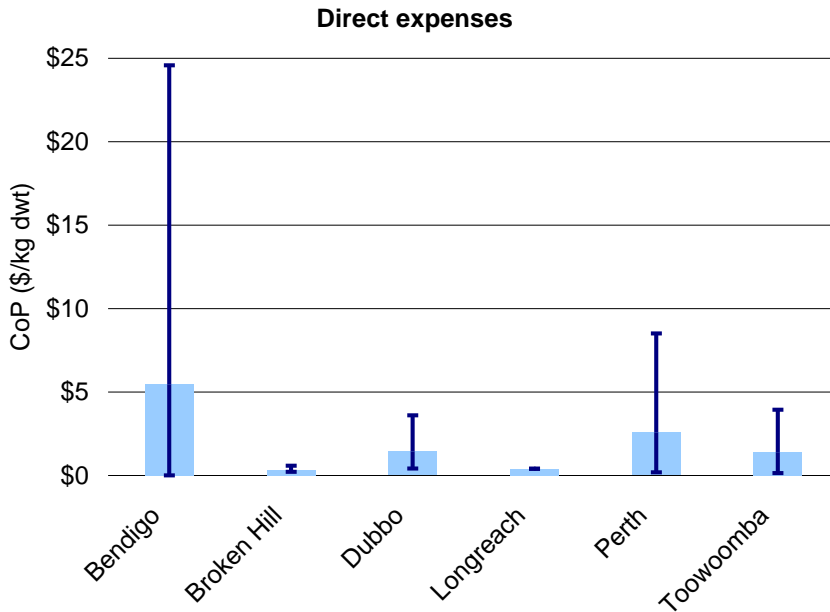


Figure 5. Direct expenses had the greatest variation at Bendigo and Perth

Figure 6 shows that on average supplementary feed costs were over \$1 per kilogram dressed weight. Supplementary feed bills exceeded \$8 per kilogram dressed weight in one case. No supplementary feed expenses were incurred in the rangeland environments.

Given the exceptionally wet seasonal conditions for the year it could be expected that supplementary feed costs were low. This was not the case. This suggests that many participants do not understand the relationship between energy required for maintenance and energy supplied by the feed on offer.

This was discussed in the workshops. This may be an area that requires an additional extension campaign to reduce cost of production in managed herds.

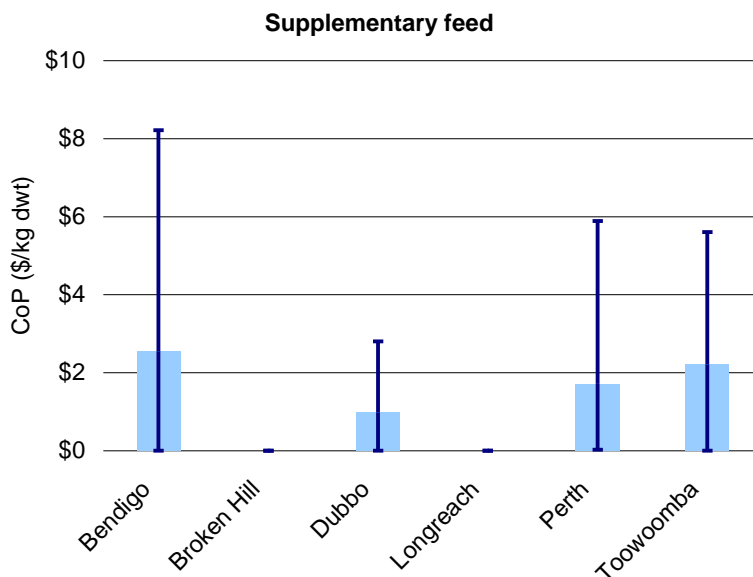


Figure 6. Supplementary feed costs were excessive, particularly given the year

Figure 7 shows that average labour expenses of Bendigo, Dubbo, Perth and Toowoomba participants exceed \$8 per kilogram dressed weight. Labour costs were under \$0.90 for the Longreach participant and were under \$0.50 for Broken Hill participants. The large range indicates that some participants were spending excessive amounts of time with their goats relative to the returns generated from them.

Improving labour efficiency is an important issue as labour accounts for up to 50% of the total overhead expenses of the business. While rangeland businesses have been shown to have a low labour cost relative to other businesses it can still be improved.

In rangeland environments a considerable amount of time is invested in the physical monitoring and maintaining of water. Investment in remote water monitoring devices and improvements in mustering efficiency is likely to lower the cost of production. Investment by MLA into the likely efficiency gains and value added to the industry with investment in these areas is worthy of consideration.

In the higher rainfall environments it would appear that a more rudimentary approach is required. Firstly it is important for producers to understand that there is a cost or an opportunity cost to farm labour. Secondly it is important that producers understand how much time they can afford to spend on the goat enterprise to maintain a cost of production below a pre-determined level. To this end Holmes Sackett developed and demonstrated several spreadsheet based tools to assist producers understand the value of their time.

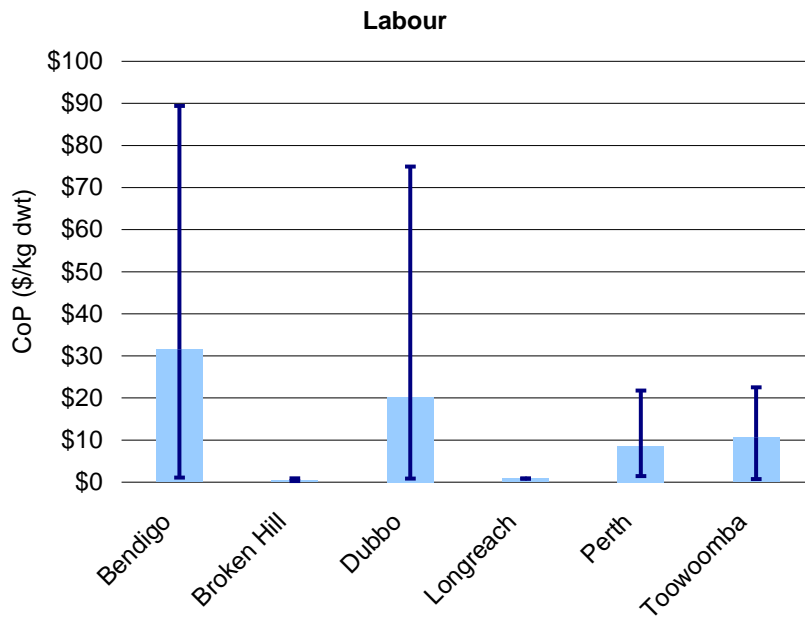


Figure 7. Average labour expenses exceed the price received in all but the rangelands environments

Figure 8 shows the average labour related expenses by location. Labour related expenses include motor vehicle expenses, depreciation, fuel and lubricants and repairs and maintenance. These are considered labour related expenses as they are associated with the on-farm labour. Bendigo and Toowoomba maintained the greatest variation in labour related expenses. The rangelands environments had the lowest labour related expenses. Typically contractors are used for mustering in these environments and many of these labour units use their own vehicles and motorbikes lowering the cost of labour related expenses to the farm.

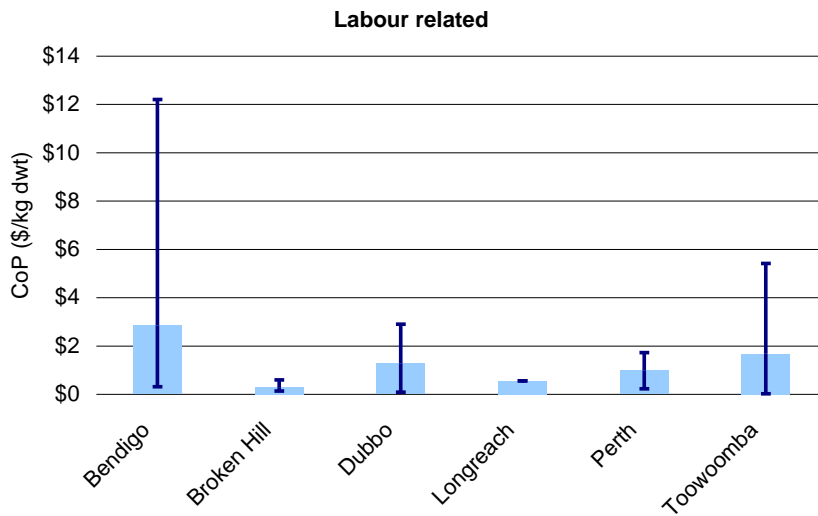


Figure 8 Rangelands environments have the lowest labour related expenses

shows a between-workshop location comparison of the overhead expenses that are not associated with farm labour. Non labour related overhead expenses include administration, electricity, insurance, pasture costs, rates and general repairs and maintenance. Business scale again appears to have an influence on the results with small scale businesses in the Bendigo area having the highest average non labour related cost of production. Rangeland producers in the Broken Hill and Longreach region have the lowest cost sitting at approximately \$0.40 per kilogram dressed weight.

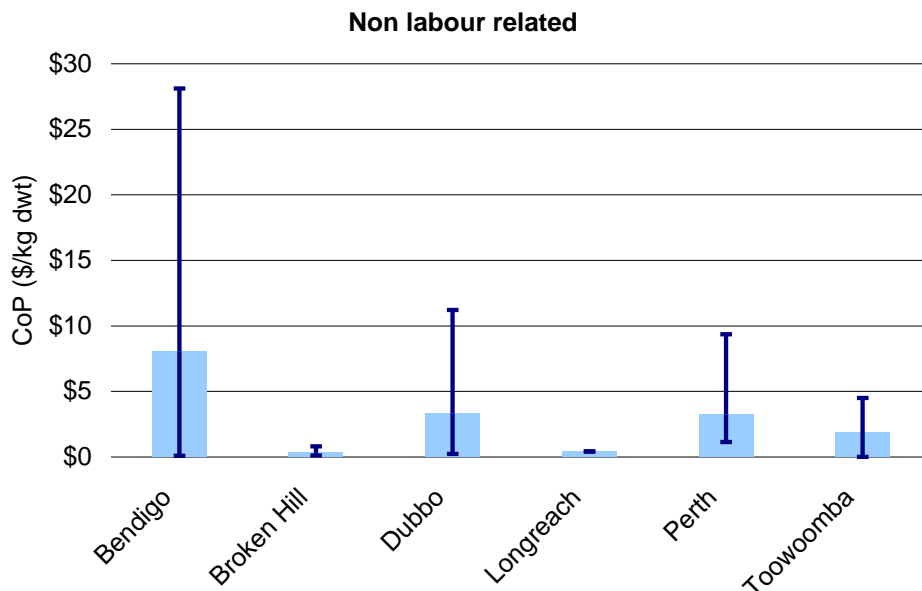


Figure 9 Non labour related overhead expenses include administration, electricity, insurance, pasture costs, rates and general repairs and maintenance

7. Analysis of production

Figure 10 shows cost of production by the proportion of total meat production. Participants with projected figures were excluded for the purposes of this analysis. Total meat production has been established by adding the adult, chevon and capretto goat meat production figures. Gross expenses have been multiplied by the proportion of gross income that total meat sales represent. That is, it accounts for enterprises with fibre and milk production. Expenses are then divided by the total production to establish total meat cost of production in kilograms dressed weight.

Figure 10 shows that approximately 90% of goat meat is produced for a cost of below \$2.50 per kilogram dressed weight. Twelve of the thirty participants with actual production had a cost of production below \$2.50. This suggests that a large proportion of the production comes from a small proportion of participants. Approximately 75% of the production is produced below \$2.00 per kilogram (6 participants). The average price received for the 2011 year was approximately \$2.40 per kilogram dressed weight. The 2011 year was the year that most participants assessed their cost of production.

Total production for the group was 910,000 kilograms dressed weight. Of this, approximately 15% came from managed herds and 85% from wild harvested herds. A wild harvested herd, in the context of this report, refers to both uncontained wild goats opportunistically harvested and wild goats in the rangelands which have been contained using fencing infrastructure.

Adult goat meat production accounted for 89% of total meat production, chevon for 10% and capretto for 1% of total production. This was driven primarily by the volume of goat meat produced by wild harvested managers who did not distinguish between categories. All goat meat produced by wild harvested operations was classified as adult goat meat.

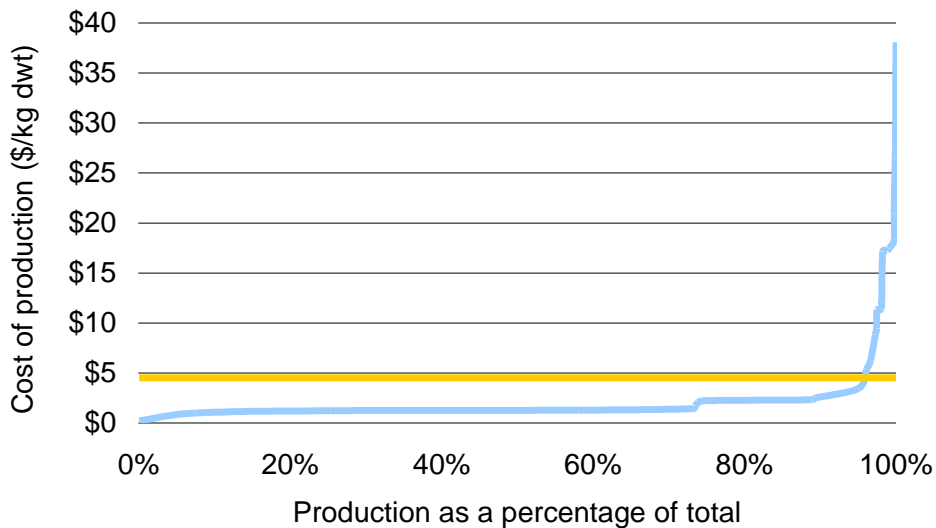


Figure 10 The majority of production occurs below a cost of \$2.50 per kilogram dressed weight

An assessment of price received by production as a percentage of total has been conducted. The results (Figure 11) show that 45% of the total production was generated for an average price received between \$2 and \$2.50 per kilogram dressed weight. Of the remainder, a price of between \$2.50 and \$4.00 per kilogram was received for the majority. Two percent of total production received prices of between \$4 and \$11 per kilogram.

The small proportion of production with high prices was the result of a number of seed stock producers being represented in the group. These producers generated a considerably higher average price received but usually at a higher cost of production. Most of these producers contain a combination of seed stock and commercial sales. The price received is dependent on the weighting of seed stock sales to commercial sales and disparity between the price of seed stock relative to goats for commercial meat sales.

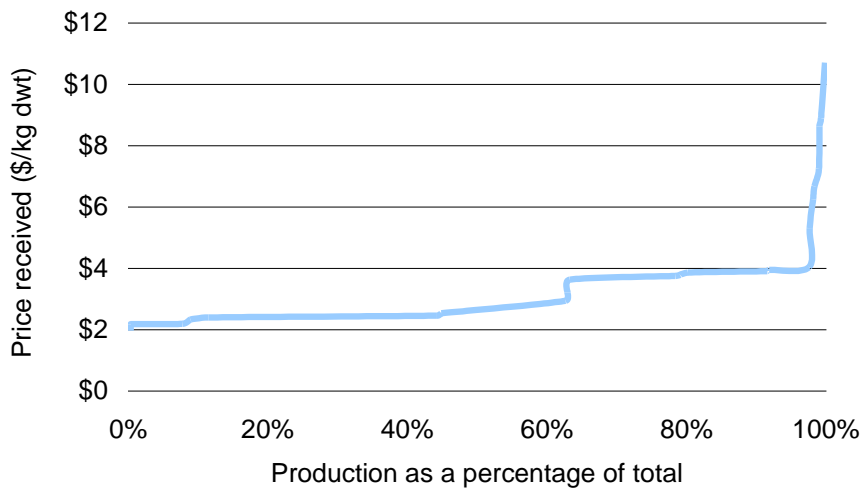


Figure 11 The median price received weighted by total meat sales is \$2.55 per kilogram dressed weight

8. Managed versus wild harvested

Of the total 910,000 kilograms of goat meat produced in this data set 84% was produced by participants with wild harvested herds (Figure 12). The remaining 16% was produced by participants with managed herds. The number of participants with wild harvested herds represented 17% of total participation with actual production. This shows that the minority of producers are responsible for the majority of production.

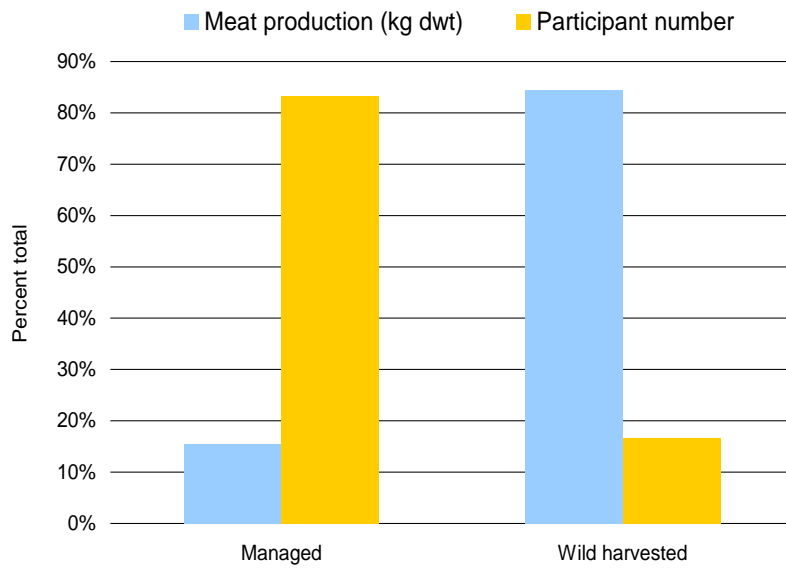


Figure 12 The majority of production comes from the minority of producers

The median cost of production for each component of the cost of production has been established for participants with managed and wild harvested herds. Figure 13 shows that the median cost of production for wild harvested herds relative to managed herds is

- 70% lower for direct expenses
- 100% lower for supplementary feed
- 94% lower for labour
- 83% lower for labour related expenses
- 77% lower for non-labour related expenses
- 81% lower for total cost of production

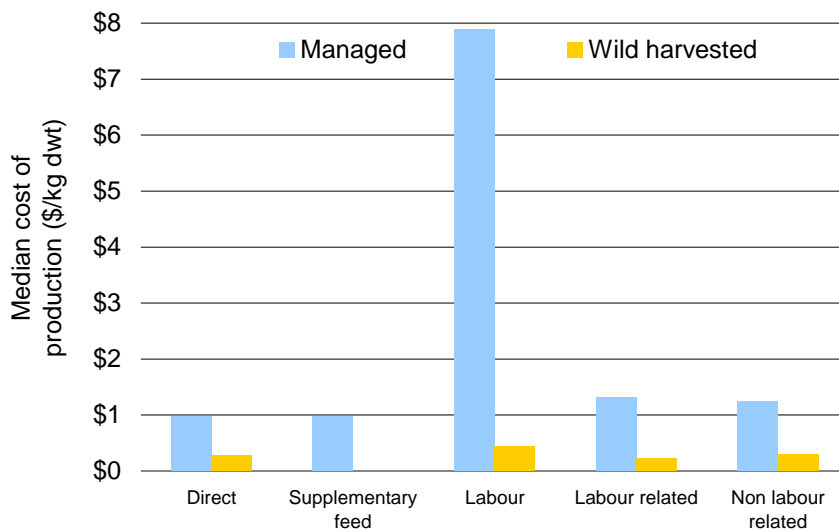


Figure 13 The major cost in goat production businesses is the cost of labour

The median weighted average price received was \$3.67 for managed herds and \$2.94 for wild harvested herds. This represents a difference of 20% between the two management systems.

The key direct expenses incurred in wild harvested goat production systems are selling costs and transport. In managed herds animal health represents a significant proportion of direct costs. This is Wild harvested herds incur no supplementary feed costs at all. The strategy is usually to sell greater numbers if seasonal conditions deteriorate.

Labour represents 70% of the total cost of production for managed herds and 35% for wild harvested herds. Large scale and a lack of the need to handle animals in wild harvested herds help to keep labour costs low relative to managed herds. Time taken to conduct mustering and some other tasks tends not to differ whether handling small or large numbers thus participants with small managed herds have a competitive disadvantage relative to those with large herds.

9. Seed stock producers

Eight of twenty eight participants with actual production produce seed stock either exclusively or in combination with commercial meat production. The price received for participants who are exclusive seed stock producers or combine seed stock production with commercial production is \$2 to \$3 per kilogram dressed weight higher than that of those with solely commercial production. It is expected that CoP will be higher in seed stock enterprises than in commercial enterprises due mainly to the additional labour necessary to manage seed stock enterprises relative to commercial enterprises.

10. Participant evaluation

Participants were asked to rate the value of both workshops on a scale from 1 to 10 with 1 being of little value and 10 being extremely valuable. The lowest score received for the evaluation was 7 while the highest was 10. Average ratings exceeded 8 for all locations except for Perth workshop 2 where the average score was 7.8.

Comments on the workshop include:

- Very useful in identifying ways to improve
- The additional technical information regarding pasture growth and systems was particularly important.
- Great networking opportunity.
- The value of the cost of my time is a bit of a shock. This is an area that I need to improve on.
- There was plenty of time to ask questions and understand the issues.
- The pace was good as it allowed for me to understand the tool and how it works.
- It was good that Blair (Brice of MLA at the time of the workshop) could be present as we value the MLA feedback.

- Interpretation of the data was useful.
- The importance of the cost of labour was a take home message for me.

11. Case study 1

This case study demonstrates how the cost of production tool can be used to compare goat enterprises with more than one herd.

The herds in the comparison include a core goat breeding enterprise selling chevon goats for meat production and a trading herd.

11.1 The breeding herd

The chevon meat production herd had average herd numbers of 350 does and 9 bucks. Doe numbers at the start of the production period were approximately 300 and were built to 390 by year end. Cull sale numbers were 46 does sold for \$38 per head while these were replaced with 142 does purchased at \$48 per head.

After accounting for changes in inventory the total quantity of adult goat meat traded was approximately 400 kilograms. As the value of purchases exceeded the sum of sales and change in the value of goat inventory there was negative goat trading income.

The number of kids sold under the chevon classification was 212 for a total of \$10,176. This equated to \$48 per head. Kids were 28 kilograms liveweight at the point of sale.

11.2 The trading herd

The trading herd is a turnover based business. The manager of the business has established relationships with processors that allow a margin to be made on every kilogram of goat meat purchased. Thus the manager purchases kids from producers at a given rate and sells them to processors at a higher rate thereby making a margin on each kilogram of meat purchased. The intention in this enterprise is not to produce meat but to hold livestock at desirable sale weights and generate a margin based on volume traded.

This goat meat trading model is a similar model to the depot system run in the rangelands areas. Depots in the rangelands are effectively “drop off points” that allow goats to be delivered prior to slaughter. This gives suppliers surety of delivery and processors surety of supply.

The manager must not only have sufficient capital to purchase the trading livestock but also knowledge of the goat meat market and processor demands.

During the trading production cycle (1 year) 2,648 kids were purchased for an average price of \$32 per head and 2,516 kids were sold for an average of \$48 per head. Sales and purchases both occur at a net liveweight of 28 kilograms per head. This is equivalent to an average dressed weight of 12 kilograms per head at an average dressing percentage of 43%.

The gross income from the trading enterprise is \$36,000. Cost of production is not a useful tool for measuring business performance in the trading enterprise because the amount of goat meat traded was less than that purchased. This means that there was negative goat meat produced thus the cost of production calculation will not make sense.

This demonstrates the importance of reviewing and ground truthing the cost of production tool outcomes. It also demonstrates that it is possible, in a trading enterprise, to have negative production but still generate a profit. For this to occur gross expenses need to be less than gross income.

The majority of direct expenses for the trading goat herd were incurred as sale and transport costs. Only minor costs outside of this were incurred for animal health expenses. Supplementary feed costs were also relatively minor sitting at \$0.19 per head for the year.

Labour costs in the trading herd are high relative to the breeding herd but when compared on a dollar per head managed cost there is only minor disparity. This relates to the amount of handling necessary in the trading herd in a relatively short period of time. Drafting, mustering and transporting within the property were the tasks consuming most of the time.

Supplementary feed costs were \$500 for both herds which equates to \$1.46 per head for the managed herd and \$0.19 per head for the trading herd. This reflects the fact that trading livestock are only managed for a very short period while the managed herd are there year in- year out.

Labour related overhead expenses include motor vehicle expenses, vehicle repairs and maintenance, fuel and oil and depreciation. These were approximately 13% higher per head in the trading herd than in the breeding herd. Non labour related overhead expenses were approximately 20% higher on a dollar per head basis in the trading herd relative to the breeding herd.

11.3 Issues arising from the case study

Cost of production is a useful tool for the breeding herd to assess business performance. Profit as a percentage of gross income in the breeding herd was 44% while it was -10% for the trading herd. The reason for the loss incurred in the trading herd was that expenses of \$40,000 exceeded income of \$36,000.

Enterprise expenses for the trading herd equated to \$6.23 per goat managed relative to only \$3.04 per goat managed for the breeding herd. Labour was also far higher at \$5.23 per goat managed relative to \$4.40 for the breeding herd.

In order for the trading enterprise to generate equivalent returns to the breeding enterprise one or a combination of the following must occur

1. A higher price must be received
2. Weight must be gained
3. Greater numbers must be traded
4. Costs must be reduced

A higher price received and more weight are unlikely to occur as this business is built on understanding the market requirements. Thus the most realistic options for improvement in profits are that greater numbers are traded with costs reduced.

There are two problems associated with trading more goats. The first is that approximately 66% of the total cost base will increase on a pro rata basis as numbers increase. That is, direct expenses, labour, supplementary feed will all increase as numbers increase. Thus \$11.65 of the \$17.64 total cost per head will increase on a pro rata basis.

The remaining costs stay constant regardless of the number of goats traded. Thus even if the number of trading goats is doubled expenses still exceed income. It is not until goat trading numbers exceed 6,700 that income exceeds expenses. This is a considerable increase in numbers traded thus there are likely to be many issues associated with this. Demand for this number of goats within the processor network and the capital required to trade the volume is also an issue.

Reducing costs is an option for improving profit but there may be limitations to the extent of the reductions that can occur or investment to achieve the reductions.

The risk associated with the trading herd relative to the breeding herd is high. There is the risk of not being paid by the processors, the large capital outlay in livestock to generate a return and the risk that the market falls between purchase and sale time.

The breeding herd has a far lower level of risk associated with it and yet it is generating a net profit to income ratio of 44%. This suggests that it may be more profitable to expand the breeding herd rather than looking to improve the profits in the trading herd.

While this sounds sensible in theory there may be practical limitations preventing this as an option. For example the trading herd may be managed on a relatively small area for a small proportion of the total year. This means that the increase in breeding numbers may be small relative to the number of goats traded.

11.4 Summary

This case study demonstrates some of the limitations to using cost of production as a tool. The cost of production tool is useful in examining some aspects of the business but further analysis is usually required to investigate options for improvements in profitability.

12. Case study 2

12.1 Comparative analysis of enterprise profitability in the rangelands

This case study shows how cost of production information generated using the goat CoP tool can be used to conduct an enterprise analysis. The case study data comes from a rangelands farm located in western NSW. The farm business is 80,000 hectares and has a total asset value of approximately \$6 million including land, infrastructure, plant and livestock.

In order to establish the cost of production of any enterprise it is necessary to allocate all of the income, enterprise expenses and overhead expenses to that enterprise. A simple way of doing this is to create a chart of accounts with enterprise expenses specific to each enterprise. The data extraction process then becomes relatively straight forward.

Typically, farm accounts will have a general entry in the chart of accounts for items such as animal health products, contract services and selling costs. This serves a useful purpose for meeting the needs of the accountant and the tax office but it has limited use when the aim is to examine the financial performance of individual enterprises. It is preferable to allocate each of the items by enterprise. This would mean that each item such as animal health would have a category for each livestock enterprise.

This becomes particularly important where there are many livestock enterprises and there is a desire to reduce the number for improved efficiencies.

The allocation of overhead items by enterprise is less important than for enterprise expenses as there are methodologies that can be used to allocate these by enterprise. Overhead expenses can be allocated on:

- proportion of farm income generated by the enterprise
- proportion of labour allocated to the enterprise
- the area relative to the total area used by each enterprise.

Thus, after establishing the cost of production for one enterprise, there is little extra effort required in extracting the data for additional enterprises.

There are 3 farm enterprises on the case study farm. These include a large goat herd that generates over \$500,000 in income, a cattle trading enterprise generating over \$300,000 in gross income and an agistment enterprise generating approximately \$20,000 in gross income. An additional income generation stream is a contract mustering business where plant from the farm is used.

The steps in the multiple-enterprise comparative analysis for each enterprise are outlined below:

1. Establish the gross income generated
2. Calculate the value of inventory change (opening value less closing value)
3. List the cost of purchases
4. Calculate the gross profit (income plus inventory change less purchase value)
5. List the enterprise expenses
6. Establish the total farm overhead expenses
7. Determine a methodology for allocating overhead expenses by enterprise. In this case enterprise gross profit as a percentage of whole farm gross profit has been used.
8. Calculate the net profit (income less enterprise expenses less overhead expenses).
9. Estimate the number of dry sheep equivalents (DSE) per enterprise. The assumption is that a nanny averages 1.5 DSE per year.

10. Calculate the net profit per DSE (Net profit per enterprise divided by DSE)

The outcome of the analysis for the case study farm is shown in table 1. Table 1 shows that agistment has provided the best returns per DSE of all enterprises followed by goats. The trading cattle enterprise has generated the lowest returns of all enterprises.

Table 1. Agistment is the most profitable enterprise followed by goats.

	Cattle	Goats	Agistment	Total
Gross profit (\$/DSE)	\$13.39	\$30.50	\$28.57	\$28.27
Direct expenses (\$/DSE)	\$6.45	\$2.67	\$0.00	\$3.30
Overhead expenses (\$/DSE)	\$5.97	\$12.81	\$3.19	\$11.43
Profit (\$/DSE)	\$0.97	\$15.03	\$25.39	\$13.53

12.2 What to do

The risk with making decisions based on assessment of a single year of data is that it is not reflective of the longer term. There may be a number of reasons for the differences in performance thus it is important to quantify these prior to making wholesale management change. In this case the figures reflect an exceptional season and very good prices for the goat enterprise. The manager has suspected that cattle profits have trailed those of goats over a long period of time.

By multiplying the marginal difference in profit between the cattle and goat enterprise by the total cattle stocking rate it is possible to calculate the opportunity cost of managing cattle.

Given that the marginal difference is \$14 per DSE the total value of the opportunity cost is \$78,000. There is no additional infrastructure or other investment required to run more goats so the decision to change enterprises will hinge on other factors. Examples of some of the other factors that will require investigation before changing include:

- the availability of labour to manage and harvest more goats
- the ability to purchase additional young breeding goats at a reasonable price
- the diversity of income and expense distribution between multiple enterprises
- the difference in grazing habit between livestock species
- the difference in capital outlay and risk associated with the change.

A decision to change from cattle to goats would maintain higher profits even if goat income was to fall by 30% and expenses remained the same.

A comparison of beef cattle trading performance with other cattle trading businesses shows that there is significant scope for improvement in this enterprise. This suggests that the skill set of the management team may be more suited to goats than trading livestock. Top performers of trading cattle enterprises generate profits on par

with the goat herd in this analysis. An important question to consider before changing enterprise is how time is best invested. It is important to understand whether it is best to acquire the management skills to improve profitability of the trading herd or leverage existing skills developed in the goat enterprise.