

final report

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Development of web-based cost of production tools for the goat industry

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Abstract

A tool modelling a typical goat production system (one for the rangelands and one for the higher rainfall zones) and outlining costs in gross terms or dollars per doe/nanny has been developed to assist goat producers understand cost of production. Outputs of the tool are reported as cost of production per kilogram of meat or fibre or litre of milk produced. The completed tool has been delivered to MLA as a Microsoft Excel spreadsheet file for upload onto the web. Comprehensive guidelines for the use of the tools have been provided as a Microsoft word file.

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1 Background

The outcomes of a series of MLA funded Cost of Production workshops run for goat producers (B.GOA.0077) demonstrated that most goat producers of all enterprise types lacked a proper understanding of the concept of cost of production in dollars per kilogram of dressed weight. The workshops also identified that there was significant variation in cost of production between participants in each workshop 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. It was recommended that 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.

2 Objectives

- Develop a cost of production tool that allows users to enter data specific to the goat enterprise in their own farm business. The tool will be developed for use in the following herds:
 - wild rangeland
 - managed rangeland
 - managed domestic.
- 2. The tool will accommodate a range of goat production enterprises with outputs reported as cost of production per kilogram of meat, kilogram of fibre or litre of milk produced. Enterprises accommodated include:
 - adult goat meat production
 - chevon goat meat production
 - capretto goat meat production
 - goat milk production
 - goat fibre production
- 3. The completed tool will be delivered to MLA as a Microsoft Excel spreadsheet file for upload onto the web. Comprehensive guidelines for the use of the tools will be written and provided as a Microsoft word file.
- 4. The tool will have functionality for data entry for two different enterprise specific herds with outputs for each herd being delivered to allow for between-enterprise comparison.

3 Results

A tool modelling a typical goat production system (one for the rangelands and one for the higher rainfall zones) and outlining costs in gross terms or dollars per doe/nanny has been developed to assist participants understand cost of production.

The cost of production tool allows users to enter data specific to the goat enterprise in their own farm business. The tool can be used for projections of returns in the following herds:

- wild rangeland
- managed rangeland
- managed domestic.

Outputs of the tool are reported as cost of production per kilogram of meat or fibre or litre of milk produced. Components of domestic goat enterprises accommodated by the tool include:

- adult goat meat production
- chevon goat meat production
- capretto goat meat production
- goat milk production
- goat fibre production

The tool has functionality for data entry for two different enterprise specific herds (eg a breeding herd and a trading herd). Outputs for each herd are reported to allow for between-enterprise comparisons.

The cost of production tool comprises of nine separate worksheets including:

- Goat meat and milk trading
- Chevon meat trading
- Capretto meat trading
- Fibre trading
- Livestock balances
- Direct expenses
- Labour expenses
- Overhead expenses
- Summary

Additional tools to assist goat producers in achieving target benchmarks for cost of production include:

- a rangeland goat meat enterprise budget model
- a domestic goat meat enterprise budget model.

These rangeland and domestic self replacing goat meat enterprise budget models use production, price and cost projections to deliver financial outputs. Outputs include budget income, expenses by category and profit and will be delivered by enterprise, doe/nanny, DSE and kilogram of dressed weight sold. These models allow for goat enterprise managers to identify the key areas that require improvement to meet pre-determined cost targets. The tools also outline the number of hours and days per year required to manage and operate the enterprise, the gross labour budget and the labour cost per kilogram of dressed weight produced.

The completed tools have been delivered to MLA as a Microsoft Excel spreadsheet file for upload onto the web. Comprehensive guidelines for the use of the tools are in the following appendices.

Appendix 1: Support information for the goat enterprise cost of production tool

Appendix 2: Support information for the rangelands goat enterprise cost of production budget tool

Appendix 3: Support information for the medium to high rainfall zone goat enterprise cost of production budget tool

Appendix 1:

Support information for the goat enterprise cost of production tool

Compiled by John Francis Holmes Sackett 26 September 2013

Goat and Milk Trading Worksheet

Opening numbers

- 1. In enterprises where **wild goats** are being harvested and it is impossible to estimate the opening or closing numbers, leave opening and closing herd number data entry points blank.
- 2. For **domestic goat** enterprises enter opening numbers of stock in each adult age class on farm at the beginning of the year to be analysed.
- 3. It is easiest to pick a start date close to when the whole herd was counted and for a period of the year that it is easy to attain financial records for (i.e. financial year or from the start of a BAS quarter).
- 4. The start date should be noted as the cost of production calculation requires all income expenses for a complete year.

Closing numbers

- 1. In enterprises where **wild goats** are being harvested and it is impossible to estimate the closing numbers, leave opening and closing herd number data entry points blank.
- 2. For **domestic goat** enterprises enter closing numbers of stock for each adult age class on farm at the end of the year to be analysed.
- 3. It is **important** that the numbers correspond to the age classes on the start date and the end date. This helps to minimize errors in stock reconciliation.
- 4. A common mistake is that users enter the stock in the wrong age class. As an example, where there were 400 kids at the start of the year entered in the Chevon Trading Worksheet that have been left in as kids at the end of the year. Those kids cannot be less that 12 months of age at the end of the year and so must appear as part of the adult goats at the end of the year.
- 5. Kids that become adults and are retained in the herd do not need to be sold into the adult herd from the chevon trading worksheet.

Inventory values

- 1. If opening and closing inventory numbers were not filled in there is no need to put in inventory values.
- 2. Inventory values are used to measure the impact of changes in livestock inventory over the course of the year. It is suggested that for benchmarking purposes estimates of a rolling 5 year averages are used.

- 3. Valuations of stock can dramatically influence cost of production if numbers change dramatically so consideration needs to be given to valuations when interpreting results.
- 4. If numbers between closing and opening do not change dramatically then inventory values will have a negligible impact on the result and the actual inventory value used is of little importance.
- 5. If numbers do change dramatically between opening and closing then it can have a dramatic impact on the results. An example of this would be where herd rebuilding is occurring. In that instance careful attention should be paid to what the inventory values are and what impact this is having on the final result. The best indicator of the actual year's results in this instance is usually market values but long term average values should also be assessed for benchmarking purposes.

Calculating the value of changes in adult goat inventory

1. The change in adult goat inventory is calculated as the difference in closing and opening number of each class of adult stock by the inventory value. The result of each class is then added up to get the total change in inventory value for adult goat.

Goat sales

- 1. Enter the numbers of goat sold in each class of stock over the course of the year from the start date to the end date.
- 2. Include does, wethers and bucks >12 months transferred from this herd to another herd in this cell as well as goat >12 months sold from this herd for cash.
- 3. Enter the weight of unshorn fibre sold if significant.
- 4. If goats are sold off shears there is no need to worry about the weight of unshorn fibre. However, if goats are sold with six months fibre this can be important.
- 5. The total weight of fibre sold with goat is calculated as the number sold multiplied by the kilograms per head entered. If some goats were sold with fibre on and some were sold without fibre then you will need to calculate an average per head from the combination of those sold without fibre and those sold with fibre.
- 6. Enter the total GST free sale value of each class of goat over the corresponding twelve month period. Remember to include a market value of goat transferred from this herd to another herd where relevant.
- 7. The total sales value is calculated as the sum of the sales value for each adult class of goat.

Goat purchases

- 1. Enter the numbers of goats purchased in each class of stock over the course of the year from the start date to the end date.
- 2. Include does, wethers and bucks >12 months transferred from a different goat enterprise to this herd in this cell as well as goat >12 months purchased for this goat enterprise for cash.
- 3. Enter the weight of unshorn fibre purchased if significant.
- 4. If goats are purchased off shears there is no need to worry about the weight of unshorn fibre. However, if goats are purchased with six months fibre this can be important.
- 5. The total weight of fibre purchased with goat is calculated as the number purchased multiplied by the kilograms per head entered. If some goat were

purchased with fibre on and some were purchased without fibre then you will need to calculate an average per head from the combination of those purchased without fibre and those purchased with fibre.

- 6. Enter the total GST free purchase value of each class of goat over the corresponding twelve month period. Remember to include a market value of goat transferred from another herd to this herd.
- 7. The total purchase value is calculated as the sum of the purchase value for each adult class of goat.

Adult fibre traded on goat

1. This is calculated as the quantity of fibre sold with goat less the quantity of fibre purchased with goat. This figure is used in the Fibre Trading worksheet to get the total volume of fibre produced.

Goat trading income

- 1. The goat trading income is calculated as the total change in adults goat inventory plus the 'total adult goat sales and transfers out' less the 'total adult goat purchases and transfers in'.
- 2. This figure is used in the cost of production calculation worksheet to split the proportion of total expenses that will be allocated to fibre and lamb.

Milk production

1. For goat milk production enter the total litres of milk sold for the year.

Goat milk income

1. Enter the value of goat milk sold for the year.

Chevon Trading Worksheet

Opening numbers

- 1. Enter opening numbers of kids at the beginning of the year to be analysed. If kids are not weaned on the opening date then do not put them in this tab unless you are sure of numbers and approximate weights and can also be sure of the closing numbers and weights for the kids born during the year.
- 2. The start date for the Chevon trading worksheet should correspond to the start date used for adult goat numbers.
- 3. If this is a chevon trading enterprise only (i.e. no breeding) it is easiest to pick a start date close to when the whole herd was counted and for a period of the year that it is easy to attain financial records for (i.e. financial year or from the start of a BAS quarter).
- 4. The start date should be noted as the cost of production calculation requires all income expenses for one whole year.

Closing numbers

- 1. Enter closing numbers of kids at the end of the year to be analysed. If kids are not weaned on the closing date then do not put them in this tab unless you are sure of numbers and weights and were also sure of the opening numbers and weights for the kids born during the year.
- It is **important** that the numbers correspond to the age classes on the start date and the end date. This helps to minimize errors in stock reconciliation. For the Chevon trading worksheet only animals less than twelve months of age should be entered.
- 3. A common mistake is that users enter the stock in the wrong age class. For example, consider the situation where there are 400 kids at the start of the year that have been left in as kids at the end of the year. Those kids cannot be less that 12 months of age at the end of the year and so must appear as part of the adult goat numbers at the end of the year rather than still be recorded on the Chevon Trading worksheet.
- 4. Kids that become adults and are retained in the herd do not need to be sold into the adult herd from the Chevon trading worksheet. Instead they are entered in as closing numbers on the Goat Trading worksheet.

Opening and closing live weights

- 1. An estimate of the average opening and closing live weight of kids must be entered if there are opening and closing numbers.
- 2. This allows the change in weight of kids between opening and closing as a consequence of a change in numbers or a change in weights to be added to the total weight sold. This process allows changes as a result of herd building or reductions to be accounted for as well as changes as a consequence of changing kidding or sale dates between years.
- 3. The average closing weight multiplied by the closing number is subtracted from the average opening weight multiplied by the opening number to get the total change in inventory weight of kids.
- 4. Remember not to include unweaned numbers and weights of kids unless you are sure you have a good estimate of the numbers and weights at both opening and closing.

Inventory values

- 1. Inventory values are used to measure the value of changes in livestock inventory over the course of the year. It is suggested that for benchmarking purposes estimates of a rolling 5 year averages are used.
- 2. Valuations of stock can dramatically influence CoP if numbers change dramatically so consideration needs to be given to valuations when interpreting results.
- 3. If numbers between closing and opening do not change dramatically then inventory values will have a negligible impact on the result and the actual inventory value used is of little importance.
- 4. If numbers do change dramatically between opening and closing then it can have a dramatic impact on the results. An example of this would be where herd rebuilding is occurring. In that instance careful attention should be paid to what the inventory values are and what impact this is having on the final result. The best indicator of the actual year's results in this instance is usually market values but long term average values should also be assessed for benchmarking purposes.

Calculating the value of changes in Chevon inventory

1. The change in Chevon inventory is calculated as the difference in closing and opening number of kids by the inventory value.

Chevon sales

- 1. Enter the numbers of kids sold over the course of the year from the start date to the end date.
- 2. **Include** kids that may be transferred from this enterprise to another as well as kids sold from this herd for cash.
- 3. **Do not include** kids that will move to an adult age class within the same enterprise.
- 4. Enter the average live weight per head of the kids sold or transferred to another herd.
- 5. Enter the weight of unshorn fibre sold if significant.
- 6. If kids are sold off shears there is no need to worry about the weight of unshorn fibre. However, if kids are sold with six months fibre this can be important.
- 7. The total weight of fibre sold with kids is calculated as the number sold multiplied by the kilograms per head entered. If some kids were sold with fibre on and some were sold without fibre then you will need to calculate an average per head from the combination of those sold without fibre and those sold with fibre.
- 8. Enter the total GST free sale value of kids over the corresponding twelve month period. Remember to include a market value of kids transferred from this herd to another enterprise if relevant.
- 9. Calculate the total weight of Chevon sold as the average weight per head sold by the total number sold.

Chevon purchases

- 1. Enter the numbers of kids purchased over the course of the year from the start date to the end date.
- 2. **Include** kids that may be transferred from another goat enterprise to this one as well as kids purchased for this herd for cash.

- 3. Enter the average live weight per head of the kids purchased or transferred from another enterprise.
- 4. Enter the weight of unshorn fibre purchased if significant. If some kids were purchased with fibre on and some were purchased without fibre then you will need to calculate an average per head from the combination of those purchased without fibre and those purchased with fibre.
- 5. If kids are purchased off shears there is no need to worry about the weight of unshorn fibre. However, if kids are purchased with six months fibre this can be important.
- 6. The total weight of fibre purchased with kids is calculated as the number purchased multiplied by the kilograms per head entered.
- 7. Enter the total GST free purchase value of kids over the corresponding twelve month period. Remember to include a market value of kids transferred into this herd from another herd.
- 8. Calculate the total weight of lamb purchased as the average weight per head purchased by the total number purchased.

Kids fibre traded on goat

1. This is calculated as the quantity of fibre sold with kids less the quantity of fibre purchased with kids. This figure is used in the Fibre Trading worksheet to get the total volume of fibre produced.

Chevon produced

- 1. The kilograms live weight of kids produced is calculated as the total change in kid inventory value plus the total weight of kid sales and transfers out less the total weight of kid purchases and transfers in.
- 2. The total live weight produced needs to be converted to dressed weight and this is done by multiplying the total live weight produced by an estimate of the average dressing % for the kids.
- 3. If the average dressing % is not known or able to be estimated use 46%.

Chevon trading income

- 1. The chevon trading income is calculated as the total change in Chevon inventory value plus the 'total Chevon sales and transfers out' less the 'total Chevon purchases and transfers in'.
- 2. This figure is used in the CoP calculation worksheet to split the proportion of total expenses that will be allocated to fibre and Chevon.

Capretto Trading Worksheet

Opening numbers

- 1. Enter opening numbers of kids at the beginning of the year to be analysed. If kids are not weaned on the opening date then do not put them in this tab unless you are sure of numbers and approximate weights and can also be sure of the closing numbers and weights for the kids born during the year.
- 2. The start date for the Capretto trading worksheet should correspond to the start date used for adult goat numbers.
- 3. If this is a Capretto trading enterprise only (i.e. no breeding) it is easiest to pick a start date close to when the whole herd was counted and for a period of the year that it is easy to attain financial records for (i.e. financial year or from the start of a BAS quarter).
- 4. The start date should be noted as the cost of production calculation requires all income expenses for one whole year.

Closing numbers

- 1. Enter closing numbers of kids at the end of the year to be analysed. If kids are not weaned on the closing date then do not put them in this tab unless you are sure of numbers and weights and were also sure of the opening numbers and weights for the kids born during the year.
- It is **important** that the numbers correspond to the age classes on the start date and the end date. This helps to minimize errors in stock reconciliation. For the Capretto trading worksheet only animals less than twelve months of age should be entered.
- 3. A common mistake is that users enter the stock in the wrong age class. For example, consider the situation where there are 400 kids at the start of the year that have been left in as kids at the end of the year. Those kids cannot be less that 12 months of age at the end of the year and so must appear as part of the adult goat numbers at the end of the year rather than still be recorded on the Capretto Trading worksheet.
- 4. Kids that become adults and are retained in the herd do not need to be sold into the adult herd from the Capretto trading worksheet. Instead they are entered in as closing numbers on the Goat Trading worksheet.

Opening and closing live weights

- 1. An estimate of the average opening and closing live weight of kids must be entered if there are opening and closing numbers.
- 2. This allows the change in weight of kids between opening and closing as a consequence of a change in numbers or a change in weights to be added to the total weight sold. This process allows changes as a result of herd building or reductions to be accounted for as well as changes as a consequence of changing kidding or sale dates between years.
- 3. The average closing weight multiplied by the closing number is subtracted from the average opening weight multiplied by the opening number to get the total change in inventory weight of kids.
- 4. Remember not to include unweaned numbers and weights of kids unless you are sure you have a good estimate of the numbers and weights at both opening and closing.

Inventory values

- 1. Inventory values are used to measure the value of changes in livestock inventory over the course of the year. It is suggested that for benchmarking purposes estimates of a rolling 5 year averages are used.
- 2. Valuations of stock can dramatically influence CoP if numbers change dramatically so consideration needs to be given to valuations when interpreting results.
- 3. If numbers between closing and opening do not change dramatically then inventory values will have a negligible impact on the result and the actual inventory value used is of little importance.
- 4. If numbers do change dramatically between opening and closing then it can have a dramatic impact on the results. An example of this would be where herd rebuilding is occurring. In that instance careful attention should be paid to what the inventory values are and what impact this is having on the final result. The best indicator of the actual year's results in this instance is usually market values but long term average values should also be assessed for benchmarking purposes.

Calculating the value of changes in Capretto inventory

1. The change in Capretto inventory is calculated as the difference in closing and opening number of kids by the inventory value.

Capretto sales

- 1. Enter the numbers of kids sold over the course of the year from the start date to the end date.
- 2. **Include** kids that may be transferred from this enterprise to another as well as kids sold from this herd for cash.
- 3. **Do not include** kids that will move to an adult age class within the same enterprise.
- 4. Enter the average live weight per head of the kids sold or transferred to another herd.
- 5. Enter the weight of unshorn fibre sold if significant.
- 6. If kids are sold off shears there is no need to worry about the weight of unshorn fibre. However, if kids are sold with six months fibre this can be important.
- 7. The total weight of fibre sold with kids is calculated as the number sold multiplied by the kilograms per head entered. If some kids were sold with fibre on and some were sold without fibre then you will need to calculate an average per head from the combination of those sold without fibre and those sold with fibre.
- 8. Enter the total GST free sale value of kids over the corresponding twelve month period. Remember to include a market value of kids transferred from this herd to another enterprise if relevant.
- 9. Calculate the total weight of Capretto sold as the average weight per head sold by the total number sold.

Capretto purchases

- 1. Enter the numbers of kids purchased over the course of the year from the start date to the end date.
- 2. **Include** kids that may be transferred from another goat enterprise to this one as well as kids purchased for this herd for cash.

- 3. Enter the average live weight per head of the kids purchased or transferred from another enterprise.
- 4. Enter the weight of unshorn fibre purchased if significant. If some kids were purchased with fibre on and some were purchased without fibre then you will need to calculate an average per head from the combination of those purchased without fibre and those purchased with fibre.
- 5. If kids are purchased off shears there is no need to worry about the weight of unshorn fibre. However, if kids are purchased with six months fibre this can be important.
- 6. The total weight of fibre purchased with kids is calculated as the number purchased multiplied by the kilograms per head entered.
- 7. Enter the total GST free purchase value of kids over the corresponding twelve month period. Remember to include a market value of kids transferred into this herd from another herd.
- 8. Calculate the total weight of lamb purchased as the average weight per head purchased by the total number purchased.

Kids fibre traded on goat

1. This is calculated as the quantity of fibre sold with kids less the quantity of fibre purchased with kids. This figure is used in the Fibre Trading worksheet to get the total volume of fibre produced.

Capretto produced

- 1. The kilograms live weight of kids produced is calculated as the total change in kid inventory value plus the total weight of kid sales and transfers out less the total weight of kid purchases and transfers in.
- 2. The total live weight produced needs to be converted to dressed weight and this is done by multiplying the total live weight produced by an estimate of the average dressing % for the kids.
- 3. If the average dressing % is not known or able to be estimated use 46%.

Capretto trading income

- 1. The Capretto trading income is calculated as the total change in Capretto inventory value plus the 'total Capretto sales and transfers out' less the 'total Capretto purchases and transfers in'.
- 2. This figure is used in the CoP calculation worksheet to split the proportion of total expenses that will be allocated to fibre and Capretto.

Fibre Trading Worksheet

Adult fibre traded

- 1. This is the difference in quantity of fibre sold on adult goats and fibre purchased on adult goats that was calculated on the corresponding herd's goat trading account.
- 2. The value of that fibre is calculated by entering an estimated value per kilogram and then multiplying it by the volume of adult fibre traded.
- 3. The average fibre price from fibre sold can be used as a guide to the valuations; however you should take into account discounts for harvest costs and short staple length that will apply as well as differences in fibre diameter.

Kids fibre traded

- 1. This is the difference in quantity of fibre sold on kids and fibre purchased on kids that was calculated on the corresponding herd's Chevon or Capretto trading account.
- 2. The value of that fibre is calculated by entering an estimated value per kilogram and then multiplying it by the volume of kids fibre traded.
- 3. The average fibre price from fibre sold can be used as a guide to the valuations; however you should take into account discounts for harvest costs and short staple length that will apply as well as differences in fibre diameter.

Actual fibre sold

- 1. Enter the **total kilograms of fibre sold as per the sales receipts** over the course of the year.
- 2. Enter the GST free gross value of fibre sold from sale receipts over the course of the year.

Opening fleece weight

- 1. Where it will given a more accurate picture of the fibre produced in the year being looked at enter an estimate of the opening fleece weight on each class of goat.
- 2. This section only needs to be filled out where there has been a change in shearing date such that there is a lot of difference in fleece fibre between opening and closing, or where goats carry significant amounts of fleece fibre at opening and closing and there has been a substantial change in goat numbers.
- 3. If weight of fleece on goat is the same at opening as it is at closing then these cells can be left blank.

Opening shorn fibre inventory

- 1. Enter the weight of any unsold fibre at the start of the year. This may include fibre stored on farm or in warehousing.
- 2. Total opening fibre inventory is calculated as the sum of all fleece fibre on goats and the unsold fibre in storage either on farm or off farm.
- 3. The average fibre price from fibre sold or valuations on fibre in storage can be used to estimate the value of the total opening inventory; however you should take into account discounts for harvest costs and short staple length that might apply as well as differences in fibre diameter.

4. The value of opening fibre inventory is calculated as the total opening fibre inventory times the estimated price.

Closing fleece weight

- 1. Where it will given a more accurate picture of the fibre produced in the year being looked at enter an estimate of the closing fleece weight on each class of goat.
- 2. This section only needs to be filled out where there has been a change in shearing date such that there is a lot of difference in fleece fibre between opening and closing, or where goats carry significant amounts of fleece fibre at opening and closing and there has been a substantial change in goat numbers.
- 3. If weight of fleece on goat is the same at opening as it is at closing then these cells can be left blank.
- 4. The value of closing fibre inventory is calculated as the total closing fibre inventory times the estimated price.

Total fibre production

- 1. Total fibre production is calculated as adult fibre traded plus kids fibre traded plus sold fibre minus total opening inventory of fibre plus total closing inventory of fibre.
- 2. This figure is used as the production figure in the cost of production calculation.

Total fibre income

- 1. Total fibre income is calculated as the value of adult fibre traded plus the value of kids fibre traded plus the value of sold fibre minus total opening inventory value of fibre plus total closing inventory value of fibre.
- 2. This figure is used in the Cost of Production worksheet to allocate this herd's expenses to fibre. Fibre production will receive that proportion of the total expenses that is represented by the percentage of total herd income that comes from fibre.

Livestock Balance Worksheet

This worksheet is provided so that the user can check that stock numbers entered balance and are therefore correct. To be confident of accuracy the livestock numbers should balance according to the formula:

Closing number = Opening number + Natural Increase + Purchases – Deaths – Sales.

- 1. The opening number cell will automatically be calculated from the respective livestock enterprise as the total opening number.
- 2. The total number of animals purchased will automatically be calculated from purchase numbers entered in the respective livestock enterprise.
- 3. The user is required to enter the total natural increase (kids or calves marked) for the specific livestock enterprise.
- 4. The user is required to enter the deaths for each of the specific livestock enterprises. If deaths are not known then enter the number that is required to balance the livestock numbers and make an assessment whether this number is realistic.
- 5. The total number of stock sold will automatically be calculated from the sales entered into the respective livestock enterprise.
- 6. The closing number of livestock is automatically calculated from the respective livestock enterprise from the closing numbers entered.
- 7. Livestock balance check. This cell indicates if numbers are not balancing. If it comes up as not balancing then the user knows that the numbers entered are not correct. All opening, closing, sales, purchases, natural increase and deaths numbers entered will need to be checked in order to get a correct outcome.

Direct Expenses Worksheet

All expenses should be entered as the GST FREE cost

Direct expenses are those which can readily be attributed to the goat enterprise type. As an example shearing is a direct expense because it is readily attributable to the goat herd. On the other hand fertiliser has been classified as an overhead because on properties where goats are run in conjunction with cattle which enterprise should bear the cost of fertiliser may not be so obvious.

Which category the expenses go in is less important than having all of the expenses accounted for. If expenses are grouped up in the chart of accounts do not worry about going through all receipts to break them out unless after the first time you have used the calculator you have worked out that it is important. In most instances the individual categories will not be important and so they are there mainly as a guide to encourage you to think through all of the probable expenses.

It is important to enter all expenses incurred over a full twelve month period in this section.

Direct goat expenses

- 1. For each category enter the total in the left hand column. The percentage that needs to be allocated out to each goat herd is then entered under the corresponding herd.
- 2. If there is only one herd then enter 100% in each category. If there are two herds then the sum of the percentages should equal 100%. If there are more than two herds or only one of multiple herds is being analysed then the two % cells for each category may not add up to 100%.
- 3. In the agistment row enter the agistment costs for goat sent away or internal agistment costs on crops or stubbles. Where the cost is internal try to use market rates at the time. If the goat were on stubble for instance for which you would not have been able to get agistment income anyway then do not charge the goat enterprise.
- 4. In the animal health row enter costs of drench, vaccine, dips and veterinary costs.
- In the contract labour row enter the costs of contract labour that would be directly attributed to a goat enterprise. This may include costs of marking; classing, mustering and casual labour used specifically for goat enterprises.
 Do not include shearing costs here.
- 6. In the shearing row enter the cost of shearing, fibre packs, emery paper, combs, cutters and any other expenses associated directly with shearing.
- 7. In the selling costs row enter all the costs associated with selling goat, chevon, capretto and fibre. Include freight, commissions, fees, taxes and levies.
- 8. In the freight costs row enter the cost of all transport that could be attributed to the goat enterprise that was not accounted for in selling costs.
- 9. In the other expenses row enter any other goat enterprise related expenses that you have not found a home for in the other categories. Dog expenses for instance might go here or miscellaneous materials.

Livestock supplementary feeding expenses

This section allows the user to allocate feeding costs to the goat enterprises. This should include supplements that are purchased off farm and also supplements that are grown on farm and fed to the enterprise. Home grown supplements should be allocated out at the market value at the time of feeding.

- Enter tonnes of feed produced on farm and an estimated market value (\$/tonne). There are two spots for on farm feed grown. The type of feed or the value per tonne is not as important as the total value and therefore if you have a total value at hand but not an estimate of weight then just put in a weight of 1 and the total value as the value per tonne. You can combine feed types together to get them to fit.
- 2. **Remember** that if the feed was home grown and you are also calculating the cost of production of feed for the crop enterprise then you need to enter the corresponding amount as income for that crop enterprise.
- 3. Quantity and value (\$/tonne) of feed purchased off farm and then fed out to livestock enterprises. There are two spots for off farm feed grown. The type of feed or the value per tonne is not as important as the total value and therefore if you have a total value at hand but not an estimate of weight then just put in a weight of 1 and the total value as the value per tonne. You can combine feed types together to get them to fit.
- 4. Enter the estimated percentage consumed by each livestock enterprise.

Labour Worksheet

This sheet is used to allocate labour costs to the goat enterprise. Both paid labour, and owner operator labour need to be included to get a standard for benchmarking purposes. For that reason the owner operator labour needs to be valued at market rates.

- 1. In the permanent labour cell enter the value of permanent or casual paid labour. It is **important** to make sure that you have not double counted with contract labour in direct enterprise expenses.
- 2. Include all on costs associated with the employment of labour i.e. workers compensation, superannuation, fringe benefits tax etc. Enter as a gross figure.
- 3. In the first family labour cell enter the number of family members working as owner operators on farm. This could be whole or part thereof of a full time labour unit. For instance a ½ time family member working will be put in as 0.5.
- 4. The first family member cell is supposed to be given to those that occupy managerial roles within the business so they can be given a managerial salary.
- 5. In the owner manager allowance cell give the equivalent salary for a full time position. Salary surveys suggest \$70,000 is an average cash salary for a manager.
- 6. In the second family labour cell enter the number, or part thereof, people who perform stationhand type roles in the business.
- 7. Owner 'station hand.' Salary surveys suggest \$40,000 is an average cash salary for a senior station hand.
- 8. Attribute a percentage of labour costs to individual enterprises by filling out the percentage of time you think they occupy. Where time sheets are not recorded (most cases) this will have to be done by a guess. The best way to approach this is to complete the process on your best initial guess. Once the Cost of Production calculation is filled in and the relative cost contributions can be looked at then you can come back and adjust if necessary.
- 9. A reason to adjust would be where one enterprise has a high labour cost and another has very low labour cost. In this instance it is likely that allocations are wrong. If all enterprises have high labour costs it is unlikely that allocation is the problem.

The allocation of labour to each enterprise will form part of the total cost structure for each enterprise.

Overhead Expenses Worksheet

The allocation of general overheads is done manually by using a % of the total for each enterprise. Enter the total at the top of the worksheet and then allocate by entering a percentage of that total to each enterprise.

- 1. In the administration cell enter the total GST free telephone, fax, postage, general office expenses. Do not include administration labour if already accounted for previously. Where appropriate take out personal expenses.
- 2. In the electricity and gas cell enter the total GST free electricity and gas costs for the year excluding costs associated with irrigation that have been entered elsewhere as direct costs for cropping. Where appropriate take out personal expenses.
- 3. In the insurance cell enter the total public liability and general farm insurance costs for the year. Workers comp should go with employment costs in the labour worksheet.
- 4. In the pasture costs cell enter the total GST free chemical, fertiliser, lime, irrigation and seed costs which are associated with pastures.
- 5. In the rates cell enter the shire, department and council rates incurred by the farm business.
- 6. In the general repairs and maintenance cell enter the total GST free expenditure on sheds, yards, and fences. Don't include costs that could be classified as capital improvements.

The plant and equipment value can be used to allocate out expenses associated with plant and equipment where there are multiple enterprises on farm. A methodology for allocation is provided by dividing the plant and equipment used for the goat enterprise by the total value of plant and equipment. For instance if goat plant is only 5% of total plant they you can use 5% to allocate out some of the total depreciation costs on the farm to goats.

The user does not have to use this methodology as the % allocation to each enterprise is put in manually. This allows the user to use commonsense where the standard allocation methodology is not working.

To work out the allocation according to the % of total value of plant and equipment;

- 1. Enter the total market value of plant and equipment which is used on farm
- 2. Enter the value of goat plant and equipment.
- 3. A percentage will be calculated which can then be used to allocate the cost for each category.

To work out the associated plant and equipment overhead costs enter the total for each category. Then allocate a % (either the one generated by the % of total value methodology or a more sensible % if required) to the goat enterprise.

- 1. In the repairs and maintenance (R&M) cell enter the GST free value of total farm R & M costs for plant and equipment over the year.
- 2. In the fuel and lubricants cell enter the total GST free costs of fuel and lubricants for the entire farm.
- 3. In the depreciation cell enter the depreciation for the entire farm. This figure can either be taken from a recent tax return or if that is not available then use 10% of the total plant and equipment as an estimate.

4. In the motor vehicle costs enter the total GST free cost for the farm use of vehicles, for example registration, insurance, repairs and maintenance. Deduct costs for private use where applicable.

Once the total has been entered for each category then enter % allocation to each enterprise. You can use the % of total plant and equipment where appropriate. A common issue in this section is how to distinguish between operating costs and capital expenditure. Capital expenditure should not be included in a cost of production calculation.

To rationally distinguish between capital expenditure and operating costs work out whether the amount spent in the year in question works out to be a lot more than the annual expenditure it would take if the total cost for the item was spread over the life of the item.

A common example is pastures. If pastures are expected to last 10 years than any more than the cost of sowing down $1/10^{th}$ of the total pasture area in a given year could be called capital expenditure. This same principal applies to fences, sheds and yards.

Where capital expenditure has occurred and some of the expense is to be left out then this should be noted so that in future years a portion (according to the life of the item) of that capital expenditure can be allocated in subsequent years.

The total general farm overheads allocated to each enterprise is used on the cost of production calculation worksheet to calculate each enterprises cost of production.

Goat Cost of Production Worksheet

This worksheet calculates the cost of production for each of the products in the goat enterprise.

At the top of the worksheet the summaries for each product are presented. Below the summaries the total cost for the goat enterprise is added up by taking the total direct costs, supplementary feed costs, labour costs, plant and equipment overheads, and general overheads from their respective cost worksheets.

The total cost for the goat enterprise then has to be allocated to individual products within that enterprise. The methodology used to do this is based on the % of total income that each product represents of total income. For a goat enterprise total income might include adult goat trading, Chevon trading, Capretto trading, fibre income and milk income.

The total income from each product comes from the respective worksheets. If fibre is 30% of total income it will receive 30% of total expenses in the cost of production calculation.

Where goat trading represents a loss (i.e. replacement does cost more than cast for age does) then the cost of those does becomes an expense to the other products.

This happens because if the total income is \$100 and goat trading is -\$20 then Chevon trading and fibre trading together must equal \$120. Therefore each as a percentage of total income adds up to 120% and the costs are therefore inflated accordingly.

To get the final goat, Chevon and Capretto trading income the amount of fibre trading income that was generated by selling fleece fibre on goats needs to be deducted. This was calculated for each in the fibre trading worksheet.

The total weight of product is also taken from each enterprise worksheet. The proportion of the total cost for each enterprise that is allocated to each product within that enterprise is then divided by the total weight of product to get the cost of production per unit of product.

Once the cost of production has been calculated it is advisable to get some help to interpret the results. It is **important** to remember that the outcome is a ratio and therefore a higher than expected number could be as a consequence of;

- 1. production being low
- 2. costs being high
- 3. a combination of both.

It is also important to remember that industry benchmarks are only useful as a guide and they **do not account for individual circumstance**. A higher than industry average cost of production outcome may be entirely appropriate for the individual circumstance and therefore care needs to be taken in interpretation.

Cost of production will **vary substantially between seasons** according to climate and markets. Attaining the cost of production over consecutive years is also very important to interpretation for the individual. The **most important benchmark** to follow over time is the year on year comparisons for the one enterprise. This will show the impact of seasons and markets on the outcome and also show whether progress is being made in controlling or lowering cost of production.

Appendix 2: Support information for the rangelands goat enterprise cost of production budget tool

Compiled by John Francis Holmes Sackett 26 September 2013

This tool constructs a budget for rangelands goat herds selling young and adult goats for slaughter.

Income is calculated by multiplying the number of sales by price received. Total expenses are calculated based on a target level of desired profit, measured as profit relative to gross income. Expenses, by category, are established from cost of production data captured during an MLA funded goat cost of production project.

Inputs

The tool outputs are dependent on the following assumptions:

Goats harvested - estimate the total number of goats harvested

Labour cost (\$ per annum) – the average cost of labour per year inclusive of superannuation, workers compensation and any other on costs.

Target profit % gross income – this is the target profit measured as a percentage of gross income. The goat CoP project shows that upwards of 40% is achievable in good seasons.

Percent sales – this allows allocation of the total sales between nannies and billies.

Average liveweight at sale (kg/hd) – this is the average weight, in kilograms per head of nannies and billies (<12 months).

Dressing percentage – this is the average percentage of saleable meat after slaughter relative to the liveweight. This will range from approximately 40-46%.

Average price received (\$/kg dwt) – this is the price expressed in dollars per kilogram of dressed weight.

Direct expense target (% total expenses) - This includes all expenses, excluding

supplementary feed directly associated with goat management. Costs include animal health and breeding, contractor costs, agistment, mustering and trapping, freight, selling costs, shearing costs and other. Estimate of 19% was established from CoP project.

Supplementary feed target (% total expenses) – the annual supplementary feed cost including internal feed transfers. Estimate of 0% was established from the CoP project. Feeding is generally considered uneconomic in rangelands environments.

Labour target (% total expenses) – the annual labour and on-costs. Estimate of 37% was established from the CoP project.

Labour related expense target (% total expenses) – the annual labour-related expenses including repairs and maintenance to plant and equipment, fuel and oil, depreciation, motor vehicle expenses and other. Estimate of 21% was established from the CoP project.

General overhead target (% total expenses) – includes administration, electricity and gas, general insurance, pasture costs, rates and rents and general repairs and maintenance. Estimate of 23% was established from the CoP project.

Total expense target – the sum of all expenses as a percentage of total expenses must add up to 100%.

Outputs

Tool outputs include goat numbers, deaths, replacement numbers and sales.

Allocations by class into Nannies, billies and the total or weighted average are made for the following:

- Total production measured in kilograms of dressed weight
- Production as a percentage of total
- Margin (dollars per kilogram of dressed weight)

Other outputs generated in the tool are labour cost calculated in dollars per hour and the total number of labour days in the budget for management of the herd. Income and expenses are assessed on the following bases:

- Gross
- Dollars per doe
- Dollars per dry sheep equivalent
- Dollars per kilogram of dressed weight (cost of production).

Total expenses are allocated into sub categories including direct expenses, supplementary feed expenses, labour expenses, labour related expenses and general overhead expenses.

The total weight of product is also taken from each enterprise worksheet. The proportion of the total cost for each enterprise that is allocated to each product within that enterprise is then divided by the total weight of product to get the cost of production per unit of product.

Once the cost of production has been calculated it is advisable to get some help to interpret the results. It is **important** to remember that the cost of production outcome is a ratio and therefore a higher than expected number could be as a consequence of;

- 1. production being low
- 2. costs being high
- 3. a combination of both.

It is also important to remember that industry benchmarks are only useful as a guide and they **do not account for individual circumstance**. A higher than industry average cost of production outcome may be entirely appropriate for the individual circumstance and therefore care needs to be taken in interpretation.

Cost of production will **vary substantially between seasons** according to climate and markets. Attaining the cost of production over consecutive years is also very important to interpretation for the individual.

The **most important benchmark** to follow over time is the year on year comparisons for the one enterprise. This will show the impact of seasons and markets on the outcome and also show whether progress is being made in controlling or lowering cost of production.

Appendix 3: Support information for the medium to high rainfall zone goat enterprise cost of production budget tool

Compiled by John Francis Holmes Sackett 26 September 2013

This tool constructs a budget for a steady state, self-replacing goat herd selling chevon or capretta goat meat.

Income is calculated by multiplying the number of sales by price received. Total expenses are calculated based on a target level of desired profit, measured as profit relative to gross income. Expenses, by category, are established from cost of production data captured during an MLA funded goat cost of production project.

Inputs

The tool outputs are dependent on the following assumptions:

Breeding doe number - the total breeding doe number

Weaning percentage – the percentage of kids weaned from breeding does joined per annum

Deaths (percentage total numbers) – the percentage of total numbers of goat deaths per annum.

Breeding doe replacement rate (percent per year) – the percentage of the total breeding doe numbers sold as culls.

Labour cost (\$ per annum) – the average cost of labour per year inclusive of superannuation, workers compensation and any other on costs.

Target profit % gross income – this is the target profit measured as a percentage of gross income. The goat CoP project shows that upwards of 30% is achievable.

Average liveweight at sale (kg/hd) – this is the average weight, in kilograms per head of adults and young goats (<12 months).

Dressing percentage – this is the average percentage of saleable meat after slaughter relative to the liveweight. This will range from approximately 40-46%.

Average price received (\$/kg dwt) – this is the price expressed in dollars per kilogram of dressed weight.

Buck joining percentage – the number of bucks divided by the total doe breeder numbers

Buck turnover rate/year – the percentage of bucks turned over annually. 1 of 4 turned over annually equates to 25% per annum.

Cost of bucks (\$/buck) – the average cost, in dollars per head, of buck purchases.

Direct expense target (% total expenses) – This includes all expenses, excluding supplementary feed directly associated with goat management. Costs include animal health and breeding, contractor costs, agistment, mustering and trapping, freight, selling costs, shearing costs and other. Estimate of 11% was established from CoP project.

Supplementary feed target (% total expenses) – the annual supplementary feed cost including internal feed transfers. Estimate of 14% was established from the CoP project.

Labour target (% total expenses) – the annual labour and on-costs. Estimate of 41% was established from the CoP project.

Labour related expense target (% total expenses) – the annual labour-related expenses including repairs and maintenance to plant and equipment, fuel and oil, depreciation, motor vehicle expenses and other. Estimate of 20% was established from the CoP project.

General overhead target (% total expenses) – includes administration, electricity and gas, general insurance, pasture costs, rates and rents and general repairs and maintenance. Estimate of 14% was established from the CoP project.

Total expense target – the sum of all expenses must add up to 100%

Outputs

Tool outputs include goat numbers, deaths, replacement numbers and sales.

Allocations by class into young goats, adults and the total or weighted average are made for the following:

- Total production measured in kilograms of dressed weight
- Production as a percentage of total
- Margin (dollars per kilogram of dressed weight)

Other outputs generated in the tool are labour cost calculated in dollars per hour and the total number of labour days in the budget for management of the herd.

Income and expenses are assessed on the following bases:

- Gross
- Dollars per doe
- Dollars per dry sheep equivalent
- Dollars per kilogram of dressed weight (cost of production).

Total expenses are allocated into sub categories including direct expenses, supplementary feed expenses, labour expenses, labour related expenses and general overhead expenses.

The total weight of product is also taken from each enterprise worksheet. The proportion of the total cost for each enterprise that is allocated to each product within that enterprise is then divided by the total weight of product to get the cost of production per unit of product.

Once the cost of production has been calculated it is advisable to get some help to interpret the results. It is **important** to remember that the cost of production outcome is a ratio and therefore a higher than expected number could be as a consequence of;

- 1. production being low
- 2. costs being high
- 3. a combination of both.

It is also important to remember that industry benchmarks are only useful as a guide and they **do not account for individual circumstance**. A higher than industry average cost of production outcome may be entirely appropriate for the individual circumstance and therefore care needs to be taken in interpretation.

Cost of production will **vary substantially between seasons** according to climate and markets. Attaining the cost of production over consecutive years is also very important to interpretation for the individual.

The **most important benchmark** to follow over time is the year on year comparisons for the one enterprise. This will show the impact of seasons and markets on the outcome and also show whether progress is being made in controlling or lowering cost of production.