CALCULATING COST OF PRODUCTION FOR YOUR LAMB AND WOOL ENTERPRISES

For sheep producers wanting to improve the performance of their enterprises, a good understanding of the current operating efficiency of the business is essential.

Cost of production is a key factor affecting the profitability of sheep enterprises. Calculating your cost of production is one of the important steps in assessing flock performance and a first step to making improvements.

COST OF PRODUCTION

Cost of production (CoP), measured in dollars per kilogram, is an indication of the outlay required to produce each kg of lamb or wool. However, as there is more than one way to calculate CoP, and people can confuse it with other indicators, CoP may not always provide a meaningful comparison between businesses. CoP should not be used to compare enterprise mixes.

The cost of production calculator has been developed to standardise this very common performance indicator, so you can easily compare the performance of your enterprise with others in the sheep industry. A quick comparison of your CoP will indicate whether you have great scope for improvement, or are already performing well.

CoP is simple to calculate. It is not complicated by how you have financed the business, how much of it you own, or how you acquire your land, and it only deals with one enterprise at a time. CoP does not automatically reveal what aspects of production you are in a position to improve, but it will provide a very useful start. You can use it to compare the operating efficiency of your business year on year, and then compare it against other sheep producers with similar resources to your own.

In developing a standard approach to calculating CoP, care has been taken to ensure that while the easiest method has been applied at every step, the usefulness of the measure has not been compromised.

KEY BENEFITS

Learn to use the MAKING MORE FROM SHEEP cost of production calculator to:

- Measure the performance of your sheep enterprise year on year
- Compare the performance of your business annually with other sheep producers and find out if there is scope for improvement, or if your enterprise is already performing well

HOW TO USE THE MAKING MORE FROM SHEEP COST OF PRODUCTION CALCULATOR

The calculator is intended to be used for only one enterprise at a time, for example a specialist prime lamb flock or a Merino wool flock. If you have a Merino wool flock and you join a percentage of the ewes to a terminal sire and the rest to Merino sires, break that flock into two enterprises: 1) a dual purpose lamb flock that includes the ewes joined to a terminal sire, and 2) a wool flock that includes those ewes joined to Merino sires and all Merino wethers. The income and costs should be apportioned accordingly throughout the calculator. Use the most appropriate 12-month period for your situation and keep the same period for each enterprise, if you have more than one.

The CoP calculator is split into the following seven sections:

1. Adult sheep trading account
2. Lamb trading account
3. Wool trading account
4. Direct expenses for whole farm business
5. Labour expenses for whole farm business
6. Overhead expenses for whole farm business
7. Summaries and CoP calculations

Each section has a number of questions to be answered from your own records, with a number next to the question referring to a comment in the explanatory notes box where required.

There is a box at the end of each section with a letter beside it that refers to the figures used in the final CoP calculation.

Once you have calculated your CoP, the next section gives you an idea of how your performance ranks against other sheep enterprises.

Please heed the WARNING section about the accuracy of CoP for different enterprise mixes.

Designed as a ‘do-it-yourself’ tool, we hope that every sheep producer will use the Making More From Sheep cost of production calculator to figure out their CoP and compare their performance annually.

Finally, knowing your CoP is just the first step. Once you have a rough idea of how you are performing, we strongly urge you to measure the performance of your business in more detail and for all enterprises. There are a number of benchmarking groups already established, run by State Departments or private farm management consultants.
CALCULATE CoP FOR A NUMBER OF YEARS TO GET AN IDEA OF YOUR AVERAGE

CoP can vary a lot between years due to a range of circumstances. These include but are not limited to:

- Unusual rainfall
- Changes to flock management or structure, such as lambing date
- Greater than normal expenses, such as capital fertiliser applications or pasture establishment

As a general rule, the more variable the rainfall for your location, the more years you should calculate to determine your average CoP. An alternative to calculating CoP over multiple years is to try to normalise entries by averaging certain expenses instead of taking the total cost into one year. As an example you might reduce repairs and maintenance spending because in that particular year you had invested in renewing the sheep yards.

THIS CoP CALCULATOR IS BEST USED FOR A PRIME LAMB AND/OR A WOOL ENTERPRISE

For businesses that run dual-purpose or multiple enterprises, costs can be split by using the percentage of gross income contributed by each enterprise.

For cattle, sheep and cropping businesses, calculating CoP for individual enterprises requires estimating how much of some costs should be allocated to each. This is difficult and can lead to significant inaccuracies. While this calculator attempts to address this with guidelines about how to proportion costs, a full benchmarking program across all enterprises is advised. In any case, the results will be a useful starting point for further discussion with your farm management adviser or benchmarking group.

HOW DOES YOUR CoP COMPARE WITH OTHERS?

PRIME LAMB ENTERPRISE

By industry standards, if you have a cost of production of less than $2.01/kg dressed weight (DW), you are performing better than the average prime lamb producer. As shown in the following diagram, the most efficient third of prime lamb producers have a regular cost of production in the range of $1.56-$2.01 per kg DW – a good goal for any prime lamb producer interested in wealth creation.

A cost of production of between $2.01 and $2.51 per kg DW would suggest significant room for improvement.

If your cost of production is greater than $2.51/kgDW, the future of your business may be at risk. Based on lamb prices less than $3.00/kg DW, you will generally not be earning sufficient income to service debt. If you own all your assets your return on equity will be poor in comparison with other investment opportunities unless your land value is appreciating considerably.
OPTIONAL EXTRAS
Using the figures you have drawn on to measure CoP, there are a couple of extra indicators you can calculate. In many cases their accuracy may be limited because they require you to estimate the figures. However, should you choose to fill these extras out, the results will be a useful starting point for further discussion with your farm management adviser.

- Kilograms of lamb produced per hectare (kg DW/ha)
  You can calculate kg DW/ha by simply dividing the number of kilograms of lamb produced (refer ‘Lamb produced’ page 9) by the number of winter grazing hectares used for lamb production. If lamb is your only enterprise, this is easy to determine accurately. However, where you have a number of different enterprises, deciding on the number of hectares you allocate to the lamb enterprise as opposed to the others may be difficult, so don’t rely too much on the result.

- Kilograms of wool produced per hectare (kg clean/ha)
  You can calculate kg clean/ha by simply dividing the number of kilograms of wool produced (refer ‘Total wool production’ page 10), by the number of winter grazing hectares used for wool production. If wool is your only enterprise, this is easy to determine accurately. However, where you have a number of different enterprises, deciding on the number of hectares you allocate to the wool enterprise, as opposed to the others, may be difficult, so don’t rely too much on the result.

- Average sale price
  For prime lamb production, you should be able to get an idea of your average sale price per kg DW from your sales records, especially if you sell over the hooks.

For wool production, you should be able to get an idea of your average sale price per kg clean from your historical sales records or divide the ‘Wool Gross Income’ box (Box SW1) by the total kilograms of wool produced (Box TWP). Alternatively, you can use the AWI Woolcheque program (www.woolcheque.com.au) as an indicator of your current clip value.

- Margin
  Subtracting your CoP from your average sale price ($/kg DW for prime lamb or $/kg clean for wool) will give you an idea of the margin you are making from your lamb and wool enterprises. If these figures are less than or close to 0, your business may be at risk.

WHERE TO FROM HERE?
Congratulations! You have taken the first step. Benchmarking your CoP has given you an idea of the scope you have for improving the profitability of your sheep enterprise.

The next step is to very clearly decide the lifestyle and financial goals your business has to support, and then determine the enterprise strategy, flock structure and markets that will best achieve these goals.

Access to capital, attitude to risk, land class and rainfall are some of the factors that make your situation different to others and will govern the enterprise choices available to you.
### ADULT SHEEP TRADING ACCOUNT

<table>
<thead>
<tr>
<th>Opening No.</th>
<th>Closing No.</th>
<th>Change (Closing-opening)</th>
<th>Inventory Value ($/hd)</th>
<th>Change in Livestock Inventory ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewes &gt;12mths</td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
</tr>
<tr>
<td>Wethers &gt;12mths</td>
<td>(e)</td>
<td>(f)</td>
<td>(g)</td>
<td>(h)</td>
</tr>
<tr>
<td>Rams</td>
<td>(i)</td>
<td>(j)</td>
<td>(k)</td>
<td>(l)</td>
</tr>
</tbody>
</table>

**No. Sold or transferred** x **Purchased on sales** (kg/hd) x **Wool sold on sheep (kg)**

- Total wool sold with sheep (kg)
- Total wool purchased with sheep (kg)

**Explanatory Notes**

- **SWS** - This is significant particularly where sheep are sold in their wool.
- **SWP** - This is significant particularly where sheep are purchased with significant amounts of wool.
- **(g) & (h)** - Include any ewes transferred from or to another sheep enterprise at their market value (e.g. $50/head).
- **(i) & (j)** - A suggested standard value of $350 can be used in the eastern states and $35 in Western Australia. It is assumed that the opening and closing values are the same.
- **(k) & (l)** - Suggested standard value of $35 can be used and it is assumed that the opening and closing values are the same.

### LAMB TRADING ACCOUNT

<table>
<thead>
<tr>
<th>Opening No.</th>
<th>Closing No.</th>
<th>Change (Closing-opening)</th>
<th>Inventory Value ($/hd)</th>
<th>Change in Lamb Inventory ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambs &lt;12mths</td>
<td>(m)</td>
<td>(n)</td>
<td>(o)</td>
<td>(p)</td>
</tr>
<tr>
<td>Lambs &gt;12mths</td>
<td>(q)</td>
<td>(r)</td>
<td>(s)</td>
<td>(t)</td>
</tr>
</tbody>
</table>

**No. Sold or transferred out** x **Purchased on sales** (kg/hd) x **Wool sold on sheep (kg)**

- Total lamb sales/purchases (kg)

**Explanatory Notes**

- **(x) & (y)** - Include any lambs transferred to another sheep enterprise at their market value (e.g. $50/head).
- **(z)** - If sheep have been purchased then use positive values so that the $STI formula remains correct.
**WOOL TRADING ACCOUNT**

<table>
<thead>
<tr>
<th>Adult Wool Traded (kg)</th>
<th>AWT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found in adult sheep trading account</td>
<td></td>
</tr>
<tr>
<td>Lambs Wool Traded (kg)</td>
<td>LWT</td>
</tr>
<tr>
<td>Found in lamb trading account</td>
<td></td>
</tr>
<tr>
<td>Wool Sold (kg clean)</td>
<td>WS</td>
</tr>
</tbody>
</table>

### Explanatory Notes

- **Cost of permanent employees ($)**
  - Total value of Closing Shorn Wool Inventory ($/kg clean)
  - Total Value Closing Wool Inventory ($)
  - $wo

- **Owner/operator allowance**
  - Percentage time worked on this sheep enterprise.
  - Total value of Closing Wool Inventory ($)
  - Total Value Closing Wool Inventory ($)

- **Opening Shorn Wool Inventory (kg clean)**
  - Opening Fleece Weight (kg clean)
  - Estimated Fleece Weight (kg/hd)
  - Opening No.

- **Closing Fleece Weight (kg clean)**
  - Closing No.
  - Closing Fleece Weight (kg/hd)

- **Feed should be valued at market price, not cost of production**
  - contractor's costs and casual labour for enterprise work (e.g., lamb marking)
  - Total value of purchased feed fed out:
  - Agistment costs
  - Transport and Cartage
  - Selling Costs (sheep and wool)
  - Shearing and Crutching

- **Other costs, e.g., Insurance, materials**
  - Total sheep direct expenses ($)
  - Total labour costs
  - Wool Trading Income

- **Wool Trading Income**
  - Total Wool Production (kg)

- **Wool Inventory ($/kg clean)**
  - Value of Closing Shorn Wool Inventory ($/kg clean)

- **Wool Inventory ($)**
  - Total Wool Production (kg)

- **Wool Trading Revenue**
  - Total Wool Production (kg)
  - Wool Trading Income

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**Total Wool Production (kg)**

TWP = AWT + LWT + WS – wo + wc

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**Direct Expenses**

<table>
<thead>
<tr>
<th>Item</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Total flock health costs</td>
</tr>
<tr>
<td>B</td>
<td>Contractors and casual labour for enterprise work (e.g., lamb marking)</td>
</tr>
<tr>
<td>C</td>
<td>Total value of purchased feed fed out:</td>
</tr>
<tr>
<td>D</td>
<td>Agistment costs</td>
</tr>
<tr>
<td>E</td>
<td>Transport and Cartage</td>
</tr>
<tr>
<td>F</td>
<td>Selling Costs (sheep and wool)</td>
</tr>
<tr>
<td>G</td>
<td>Shearing and Crutching</td>
</tr>
<tr>
<td>H</td>
<td>Other costs, e.g., Insurance, materials</td>
</tr>
</tbody>
</table>

**TOTAL SHEEP DIRECT EXPENSES**

$D = $awt + $lwt + $ws - $wo + $wc

**Labour Expenses**

<table>
<thead>
<tr>
<th>Item</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Number</td>
</tr>
<tr>
<td>J</td>
<td>Value</td>
</tr>
</tbody>
</table>

**TOTAL LABOUR COSTS**

$X = $wo + $wc

**Total value of Closing Shorn Wool Inventory ($)**

$wo = $awt + $lwt + $ws - $wo + $wc

**Total Wool Trading Income**

$WI = $awt + $lwt + $ws - $wo + $wc

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**EXPLANATORY NOTES**

- A = Includes drenches, drips, vaccines and vet costs
- B = Includes marking, classing, mustering and casual labour used for the lamb enterprise (excluding shearing and crutching)
- C & D = Feed should be valued at market price, not cost of production because if it wasn’t fed to stock it could have been sold on the market
- E = Cost of agistment for sheep sent away
- F = Include cost of all lamb, ewe and ram transport (not involved in selling costs)
- G = For all sheep and wool sold; including freight, commissions, fees, taxes and levies
- H = Include cost of shearing, crutching, mulesing, wool packs, emery paper, combs, cutters and any other associated expenses
- I = Include any permanent paid labour (casual labour goes in B) and not owner/operator or family members; include all on-costs, e.g., workers compensation, superannuation etc.
- J = This is an allowance for the ‘manager’ of the business; if ‘manager’ is less than full time, pro rata the $55,000 annual allowance, ie, 50% = $27,500 per annum; exclude off-farm labour
- * = This is a manager’s allowance for the first owner labour unit. Exclude off-farm labour so if the first labour unit is less than full time then use the corresponding fraction of the full time unit
- K = Additional family labour over and above the first labour unit is given station hands wages of $35,000.
- L = Estimate if time records not available
<table>
<thead>
<tr>
<th>Whole Farm Total ($)</th>
<th>% Allocation to Sheep Enterprise</th>
<th>Sheep Enterprise Overheads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Electricity and Gas</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>General Insurance</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Pasture Costs</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Rates and rents</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Repairs and maintenance: shed, yards, fences, land</td>
<td>U</td>
<td></td>
</tr>
</tbody>
</table>

Total Market Value of Plant and Equipment

Value of Sheep Enterprise Plant and Equipment (includes farm utes, motorbikes etc.)

Sheep enterprise plant and equipment as a % of total plant and equipment: sp%

Repairs and maintenance: plant & equipment

Fuel and oil

Depreciation

Other

Motor Vehicle Expenses

TOTAL (Sum of O to U) X sp% = sum sheep enterprise overheads above = $O

TOTAL OVERHEAD COSTS

EXPLANATORY NOTES
M = Telephone, fax, postage, general office expenses; do not include labour if already accounted for previously
N = Exclude personal use
O = Includes public liability, sickness and accident insurance
P = Rates include shire, RLP Board and council
Q = Includes vehicles, motor bikes, tractors etc. DO NOT include labour if already accounted for previously
R = Includes petrol, distillate, fuel oils and lubricants; exclude personal use
S = Include chemicals, fertilisers, irrigation and seed
T = Use the depreciation figures from your most recent tax return
U = Include items not already accounted for
V = Farm usage only for all private and farm vehicles (cars, utes, 4WD, trucks, bikes) – registrations and licenses, insurance, repair and maintenance

SUMMARIES AND CoP CALCULATIONS

<table>
<thead>
<tr>
<th>$</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Expenses</td>
<td>$D – from expense page</td>
</tr>
<tr>
<td>Labour Expenses</td>
<td>$L – from expense page</td>
</tr>
<tr>
<td>Overhead Expenses</td>
<td>$O – from expense page</td>
</tr>
<tr>
<td>TOTAL EXPENSES</td>
<td>$TE = $D + $L + $O</td>
</tr>
<tr>
<td>Wool Income</td>
<td>$WI – from wool trading account</td>
</tr>
<tr>
<td>Sheep Trading Income</td>
<td>$STI – from sheep trading account</td>
</tr>
<tr>
<td>Wool Income Traded with Sheep</td>
<td>$sawt – from wool trading account</td>
</tr>
<tr>
<td>Sheep Trading Income (net of wool)</td>
<td>$SNSI = $STI - $sawt</td>
</tr>
<tr>
<td>Lamb Trading Income</td>
<td>$LTI – from lamb trading account</td>
</tr>
<tr>
<td>Wool Income Traded with Lamba</td>
<td>$SLWT – from wool trading account</td>
</tr>
<tr>
<td>Lamb Trading Income (net of wool)</td>
<td>$SLI = $SLTI - $SLWT</td>
</tr>
<tr>
<td>TOTAL INCOME</td>
<td>$STI = $WI + $SNSI + $LI</td>
</tr>
<tr>
<td>Wool as a proportion of total enterprise income</td>
<td>%</td>
</tr>
<tr>
<td>Total cost of wool production</td>
<td>$SWC = $TE x $pWI</td>
</tr>
<tr>
<td>Total kg wool produced (kg clean)</td>
<td>$TWP – from wool trading account</td>
</tr>
<tr>
<td>Yield</td>
<td>$IClean TWP = TWP x Yield</td>
</tr>
<tr>
<td>WOOL COST OF PRODUCTION ($/KG CLEAN)</td>
<td>$WCop = WC / Clean TWP</td>
</tr>
<tr>
<td>Lamb as a proportion of total enterprise income</td>
<td>%</td>
</tr>
<tr>
<td>Total cost of lamb production</td>
<td>$SLC = $TE x $pLI</td>
</tr>
<tr>
<td>Total kg lamb produced (kg dressed weight)</td>
<td>$TLP – from lamb trading account</td>
</tr>
<tr>
<td>LAMB COST OF PRODUCTION ($/KG Dwgt)</td>
<td>$LCop = LC / TLP</td>
</tr>
</tbody>
</table>

SHEEP ENTERPRISE LIVESTOCK SCHEDULE

<table>
<thead>
<tr>
<th></th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Opening</td>
<td>+</td>
</tr>
<tr>
<td>Total Purchases</td>
<td>-</td>
</tr>
<tr>
<td>Natural Increase</td>
<td>+</td>
</tr>
<tr>
<td>Deaths</td>
<td>-</td>
</tr>
<tr>
<td>Total Sales</td>
<td>-</td>
</tr>
<tr>
<td>Total Closing</td>
<td>-</td>
</tr>
<tr>
<td>Balance</td>
<td>==</td>
</tr>
</tbody>
</table>

EXPLANATORY NOTES
$NSI - If sheep trading income is negative then wool and lamb income as a percentage of total income will be higher than 100%. This is because the negative sheep trading income is a cost on the business that is shared between lamb and wool.

Clean TWP – If wool entries in the wool trading account were greasy then the total wool produced (TWP) needs to be converted back to a clean basis. This is done by estimating the yield. If TWP entries were on a clean basis then use TWP.
FURTHER INFORMATION

For more information from Making More From Sheep for your sheep enterprise, call AWI on 1800 070 099, or MLA on 1800 675 717 or visit www.makingmorefromsheep.com.au.

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