

a joint initiative of



Australian Wool
Innovation Limited



Making More From Sheep

Cost of Production
Calculator



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

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 *Making More From Sheep* 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.

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.

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.

WARNING

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.

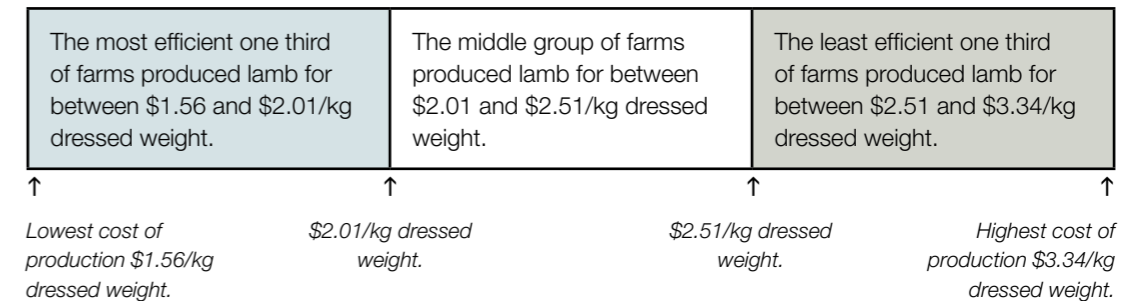
HOW DOES YOUR CoP COMPARE WITH OTHERS?

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.



WOOL ENTERPRISE

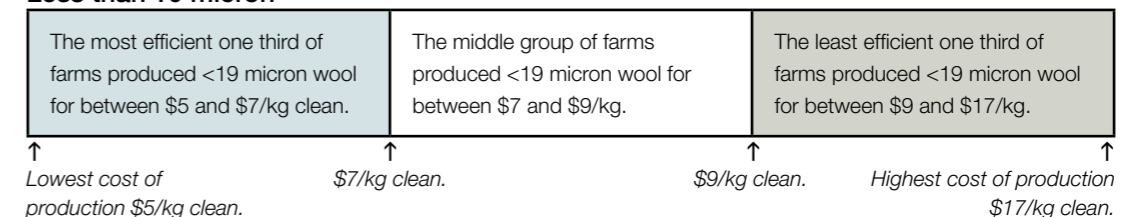
Fine wool (less than 19 micron) tends to have a higher cost of production than medium and strong wool. The reasons are a combination of intensity of production systems (fine wool production in higher rainfall areas) and lower fleece weights of sheep. Choose which category you fit into by comparing your average adult micron for your clip.

The most efficient one third of fine wool enterprises produce wool for between \$5 and \$7/kg clean. The middle group produce wool for between \$7 and \$9/kg clean, and the least efficient one third of farms produced wool for between \$9 and \$17/kg clean.

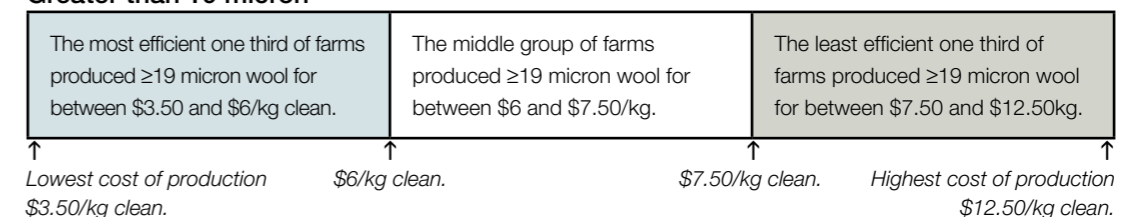
The most efficient one third of medium to strong wool enterprises produce wool for between \$3.50 and \$6/kg clean. The middle group produce wool for between \$6 and \$7.50/kg clean, and the least efficient one third of farms produced wool for between \$7.50 and \$12.50/kg clean.

If your cost of production for your fine wool (less than 19 micron) enterprise is greater than \$9/kg clean, or greater than \$7.50/kg clean for your medium-strong wool (19 micron or stronger) enterprise, the future of your business may be at risk. 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.

Less than 19 micron



Greater than 19 micron



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 \$WI) 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.

However, all options you might take will influence either of two things – your feed supply or your feed demand.

Feed demand is influenced by the flock structure and target markets you choose. The tactical options you may choose from to change feed demand include: classes of stock, breed, time of lambing, age at weaning, target growth rates and turn-off weights. All of these factors influence the feed demand in terms of quality and quantity required at different times of the year.

On the other side of the equation, options for providing the feed required include: the pasture species grown on different land classes; the grazing rotation, which includes fencing, grazing and rest times; the use of irrigation, supplementary feeding, and fodder conservation.

Based on your current enterprise structure, you need to determine how well your feed supply matches your feed demand. There are a number of programs available to help you do this, such as MLA's *EDGEnetwork*[®] *PROGRAZE*[®] course, as well as various tools and information in Turn Pasture into Product in the *Making More From Sheep* manual. MLA's Feed Demand calculator is a relatively simple tool to use and can be downloaded free from its website (www.mla.com.au). Alternatively, you can contact your local State Department or farm management consultant for assistance.

If the match between your feed supply and demand is poor, look for options to change either or both. Other sheep producers, often from regions quite different to yours, can be a great source of new options for you to consider. Keep an open mind, listen to others and read widely.

When you have chosen a few possible options, you should do an economic analysis of each of those options to ensure they will meet the profit goals you have set.

Once you have decided on the flock structure, target markets and feed supply options you want to implement, you need to develop a transition plan to get from the current enterprise strategy to the new one. This plan needs to account for access to capital, and have defined limits for cash flow and liquidity against which you can monitor progress. If these limits are breached, action can be taken in advance to get the business back on track. This is critical to managing risk. Developing an enterprise strategy is a complex task requiring many repetitive calculations. Most farm management consultants have a range of computer tools to automate this process, and they are aware of most of the pitfalls that may confront you. It is strongly advised that you seek professional support.

WOOL TRADING ACCOUNT

Adult Wool Traded (kg)		AWT
Found in adult sheep trading account		
Lambs Wool Traded (kg)		LWT
Found in lamb trading account		
Wool Sold (kg clean)		WS

	Opening No.	Estimated Fleece Weight (kg/hd)	Fleece Weight (kg)
Ewes	(1)	(2)	(9)
	= (a)		= (2) x (1)
Lambs (<12 months)	(3)	(4)	(10)
	= (i)		= (4) x (3)
Wethers	(5)	(6)	(11)
	= (c)		= (6) x (5)
Rams	(7)	(8)	(12)
	= (e)		= (8) x (7)
Opening Fleece Weight (kg clean)			os
			= (9) + (10) + (11) + (12)
Opening Shorn Wool Inventory (kg clean)			oi
TOTAL OPENING INVENTORY (KG)			woi = os + oi

	Closing No.	Estimated Fleece Weight (kg/hd)	Closing Fleece Weight
Ewes	(13)	(14)	(21)
	= (b)		= (2) x (1)
Lambs (<12 months)	(15)	(16)	(22)
	= (ii)		= (15) x (16)
Wethers	(17)	(18)	(23)
	= (d)		= (17) x (18)
Rams	(19)	(20)	(24)
	= (f)		= (19) x (20)
Closing Fleece Weight (kg clean)			cs
			= (21) + (22) + (23) + (24)
Closing Shorn Wool Inventory (kg clean)			ci
TOTAL CLOSING INVENTORY (KG)			wci = cs + ci
TOTAL WOOL PRODUCTION (KG) =			wci = cs + ci
TWP = AWT + LWT + WS - woi + wci			

\$/kg	Total Values (\$)	
	(25)	\$awt = AWT x (25)
	(26)	\$lwt = LWT x (26)
	Gross Value (\$)	\$ws
	Average Value (\$/kgclean)	
	(Wool sold value \$ divided by Wool sold kg clean)	\$ws / WS

Value of Opening Shorn Wool Inventory (\$/kg clean)	Total Value Opening Wool Inventory (\$)
(27)	\$wo
*	(27) x woi

**(Use wool appraisals to get this figure if possible)*

Value of Closing Shorn Wool Inventory (\$/kg clean)	Total Value Closing Wool Inventory (\$)
(28)	\$wc
*	(28) x wci

**(Use wool appraisals to get this figure if possible)*

WOOL TRADING INCOME	
\$WI = \$awt + \$lwt + \$ws - \$wo + \$wc	

EXPLANATORY NOTES

(2), (4), (6), (8), (14), (16), (18) & (20) – Estimating wool on sheeps back at opening and closing is only important where there has been a change in shearing time or where significant numbers of sheep have been purchased which means the average may have changed. If weight on sheeps back at opening and closing are the same then this step can be left out.

(25), (26), (27), (28) – It might be appropriate to use the average wool price from wool sold to put a value on adult wool traded with sheep. This is significant particularly where sheep are sold / purchased in their wool.

DIRECT EXPENSES

					\$
Total flock health costs					A
Contractors and casual labour for enterprise work (ie lamb marking)					B
Total value of home grown feed fed out:					C
Total value of purchased feed fed out:					D
Agistment costs					E
Transport and Cartage					F
Selling Costs (sheep and wool)					G
Shearing and Crutching					H
Other costs, eg Insurance, materials					
TOTAL SHEEP DIRECT EXPENSES					\$D = sum direct expenses above
LABOUR EXPENSES					
Cost of permanent employees (\$)					I
	Number		Value		
Owner/operator allowance *		X	J	=	
Cost of additional family labour (not already included above)		X	K	=	
TOTAL LABOUR COSTS					\$tl = sum labour expenses above
Percentage time worked on this sheep enterprise.					L ta
TOTAL LABOUR COST OF SHEEP ENTERPRISE					\$L = \$tl x \$ta

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, eg 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

OVERHEAD EXPENSES

	Whole Farm Total (\$)		% Allocation to Sheep Enterprise		Sheep Enterprise Overheads
Administration	M	X		=	
Electricity and Gas	N	X		=	
General Insurance	O	X		=	
Pasture Costs	S	X		=	
Rates and rents	P	X		=	
Repairs and maintenance: shed, yards, fences, land	U	X		=	
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	Q				
Fuel and oil	R				
Depreciation	T			=	
Other	U			=	
Motor Vehicle Expenses	V				
TOTAL (Sum of Q to V)		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

	\$	
Direct Expenses		\$D – from expense page
Labour Expenses		\$L – from expense page
Overhead Expenses		\$O – from expense page
TOTAL EXPENSES		\$TE = \$D + \$L + \$O
Wool Income		\$WI – from wool trading account
Sheep Trading Income		\$STI – from sheep trading account
Wool Income Traded with Sheep		\$awt – from wool trading account
Sheep Trading Income (net of wool)		\$NSI = \$SI - \$awt
Lamb Trading Income		\$LTI – from lamb trading account
Wool Income Traded with Lambs		\$LWT – from wool trading account
Lamb Trading Income (net of wool)		\$LI = \$LTI - \$lwt
TOTAL INCOME		\$TI = \$WI + \$NSI + \$LI
Wool as a proportion of total enterprise income	%	pWI = \$WI / \$TI
Total cost of wool production		\$WC = \$TE x pWI
Total kg wool produced (kg clean)		TWP – from wool trading account
		Yield
		IClean TWP = TWP x Yield
WOOL COST OF PRODUCTION (\$/KG CLEAN)		WCoP = WC / Clean TWP
Lamb as a proportion of total enterprise income	%	pLI = \$LI / \$TI
Total cost of lamb production		\$LC = \$TE x pLI
Total kg lamb produced (kg dressed weight)		TLP – from lamb trading account
LAMB COST OF PRODUCTION (\$/KG Dwgt)		LCoP = LC / TLP

SHEEP ENTERPRISE LIVESTOCK SCHEDULE

Total Opening	
	+
Total Purchases	
	+
Natural Increase	
	-
Deaths	
	-
Total Sales	
	-
Total Closing	
	=
Balance	

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.

NOTES

NOTES

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

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The MLA & AWI Making More From Sheep Cost of Production Calculator has been designed to help you estimate the cost of lamb and wool production.

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