5 HOW DO I MEASURE THE FINANCIAL PERFORMANCE OF MY FARM BUSINESS?

5 HOW DO I MEASURE THE FINANCIAL PERFORMANCE OF MY FARM BUSINESS?

This section covers the essentials of farm business management and will help answer most business questions when it comes to viability, financial sustainability and efficiency. Mastering this area of your business will help you to:

- Measure business performance with farm business management budgets. These form the basis of 'best practice' farm business management.
- Analyse, plan, monitor and evaluate business performance – all part of the farm business planning cycle.
- Maintain business viability, efficiency and wealth.

Much of the thinking behind modern farm business management occurred in the 1950's and 1960's. While there have been significant developments in agricultural technologies since this period, the thinking behind farm business management developed in that period was sound and remains relevant today. A major advance has been the development and use of software to record financial data and do financial modelling. The use of spreadsheets, accounting software and farm business modelling software are perhaps the biggest advances to farm business management in recent years and these have now become available for farmer use, not just for professional advisers.

The most readily available financial records for a farm business are documented in annual tax returns, as these are mandatory financial documents needed to calculate tax liability. In fact, the introduction of GST in 2000 caused a significant change to the way businesses recorded financial information, as financial reports were required to be submitted monthly or quarterly to report GST liability. However, as these financial records have to be compliant with the Australian Tax Office rules, this information is inadequate for farm business management purposes. The challenge is to take this improved financial record-keeping completed for tax obligations and then use it to develop a set of useful farm business management budgets. The farm business management tools described in this module will help clarify the financial performance and capacity of your farm business. However, it takes a high level of business governance and personal discipline to maintain consistently a set of farm business management budgets and plans. Doing this enhances understanding of business thinking and performance, and improves the chance of successfully achieving your goals.

When assessing the financial performance of your farm business, there are three key concepts to consider (Figure 5.1).

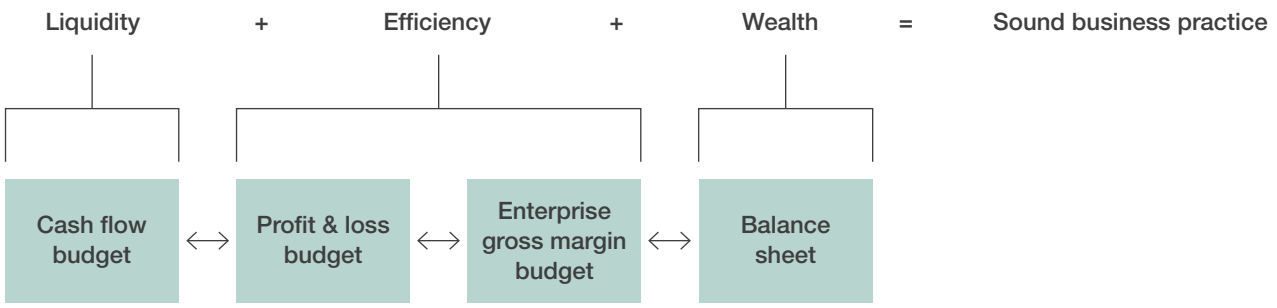
These were referred to in section **3, Farm business management, module 1**, and are addressed in greater detail in this section as measures of farm business performance:

Liquidity (cash) – This refers to cash flow. A business is liquid when more cash comes into the business than goes out.

Efficiency (profit) – This refers to how well the resources of the business are being used: is the business getting the best return on the capital being managed? Efficiency is measured as profit using a profit and loss budget and a balance sheet.

Wealth (net worth) – This refers to the ability of the farm business to build wealth (net worth) over time. Building wealth gives owners greater choice about goals, taking up business opportunities and managing the risk of financial downturn, when inevitable poor seasons and commodity prices prevail.

Figure 5.1: Key management concepts



Source: P2PAgri P/L

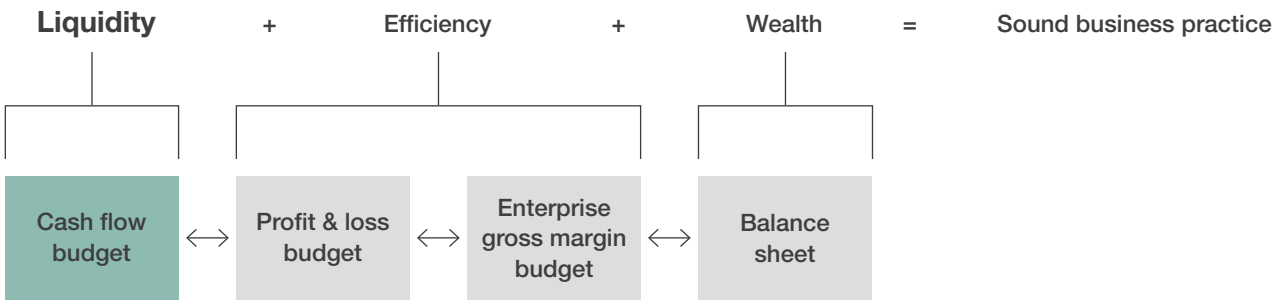
5.1 LIQUIDITY

This section covers the importance of liquidity to your farm business. Essentially, this is about how cash is managed in the business.

KEY POINTS

- A cash flow budget is a financial 'tool' that tracks cash availability to the business, known as 'Liquidity'.
- A positive net cash flow is where more money comes into the business than goes out.
- Net cash flow is a key measure to show banks whether the business can service its debt, which is essential to retain the confidence of the bank.
- A poor cash flow over a period of years can be catastrophic for the sustainability of a business.

Figure 5.2: Key management concepts: Cash flow



Source: P2PAgri P/L

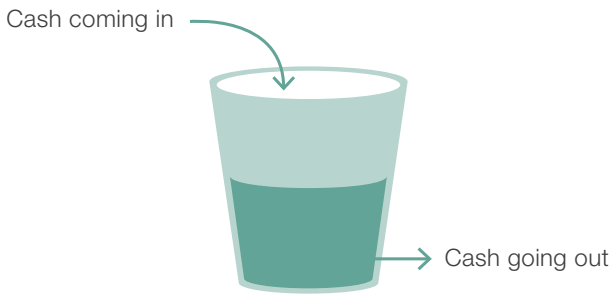
The monthly or quarterly cash flow budget is a financial 'tool' to help plan the expected cash flow required in your business across the season, and then monitor the actual cash flow compared with the expected cash flow as the season unfolds. Completing this budget to accurately reflect your farm business cash flow will require some understanding of accounting concepts such as accrual accounting, and allowing for GST. The key management concept of **Liquidity**, as measured by a cash flow budget (see Figure 5.2) is the focus for this section.

5.1.1 Cash flow

The cash flow budget is one of the major financial tools in farm business management.

The cash flow budget measures the amount of cash coming into a business and when it comes in, against what goes out and when it goes out. Figure 5.3 is a simple illustration of how a cash flow budget works. Cash flow can be measured as an annual budget, but more commonly is a one to two-year monthly budget. It is one of the simplest and most useful tools in farm business management and probably the budget most widely used by Australian farmers.

Figure 5.3: A business cash flow



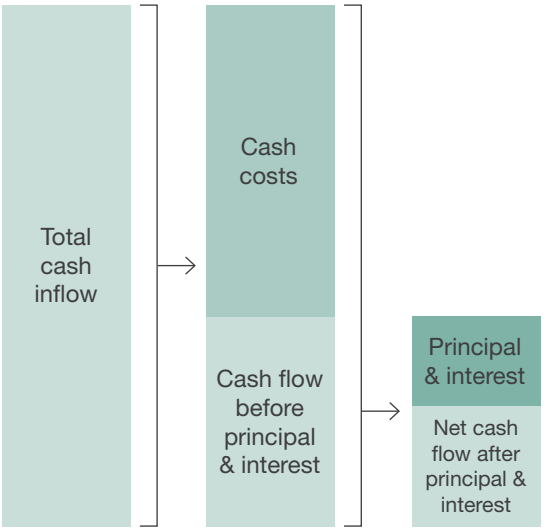
Cash flow management is about keeping enough cash in your 'bucket' to meet the out-goings.

Source: P2PAgri P/L

What is a cash flow budget?

Figure 5.4 illustrates a cash flow budget, where the total cash that flows into the farm business is balanced against the cash costs and loan repayment costs (principal and interest). The aim of any business is for the annual 'Net cash flow after principal and interest payments' to be positive rather than negative. If the farm business' cash flow is negative for a couple of years, then either business reserves will be needed to maintain business viability, or bank debt will need to increase to cover the negative cash flow.

Figure 5.4: Cash flow budget



Source: 'Agriculture in Australia', Bill Malcolm, et al, 2009

How do banks use the information from your monthly cash flow?

Most farmers develop a cash flow budget because the bank has asked for it to be developed. Banks use a farm's past and projected cash flow for the following reasons:

> To assess at what times during the season the overdraft is required.

> To know when the overdraft will be at its maximum and how large it is likely to be.

> To assess the farm's capacity to make loan repayments as they become due.

> To assess the client's ability to manage cash.

This information enables the bank to assess the client's overdraft requirements as well as manage their own credit requirements, as they need to make this finance available when it is needed.

How does a monthly cash flow budget help your business management?

A challenge for farmers is to not only develop a projected cash flow budget, but to use it for monitoring cash flows through the year. Only then does the cash flow budget become a really useful management tool, as the information about actual versus expected cash flows will enhance and tighten the cash management of the business. If your estimated monthly cash flow is only being done to meet the bank's requirements, then the bank may be driving your business rather than you! You may be missing important management information that can be gained by actually monitoring the cash flow throughout the season and comparing estimated versus actual figures.

The benefits to farmers of estimating and monitoring the monthly cash flow budget include:

- Knowing when income and expenditure are expected to occur, and if they don't occur, having the ability to check quickly why this has happened and its likely impact on the overdraft.
- Using the cash flow budget to manage payments and income to help minimise the use of an overdraft, and reduce overdraft interest costs.
- Providing the farm with an early indicator of how much additional finance might be needed following a tough financial period. The farmer can be proactive with the bank by looking early at likely additional finance needs, before other farmers who have not been closely monitoring their cash position.

A cash flow budget will be of most benefit to a farm business when it involves two steps: **a forward estimate of the monthly cash flow**, followed **by recording monthly actuals** against these estimated figures. Software programs have greatly improved the ability to undertake this type of management.

Step 1: Estimating monthly cash flow

The first challenge for farmers is estimating likely cash outgoings and incomings, as you need to go through each category estimating when income and expenditure will occur. To illustrate this, the cash flow estimate of 'Upndowns Farm' is provided in Table 5.1.

A template to complete your cash flow budget can be downloaded at: **www.grdc.com.au/FBMtemplate-CashFlow**

When looking at the sample farm's estimated cash flow in Table 5.1, take note of:

- **Income:** Each enterprise is allocated an income row, so respective incomes can be specifically estimated. In estimating when income enters the business account, check these issues:
  > Remember that marketing choices like grain pools may take longer than 12 months to complete payment. This means you could have a grain pool payment coming into this 12-month period, even though the grain was produced in the previous season.
  > Allow for income from contracting work you plan to do for the neighbours.
  > Income can also come from off-farm investments and off-farm employment, such as teaching or nursing.
- **Expenditure:** Outlines the different types of business expenses. Note that Table 5.1 has four types of expenses:
  > Crop costs,
  > Livestock costs,
  > Overhead costs, and
  > Finance costs.

Table 5.1: 'Upndowns Farm' planned cash flow

		Planned monthly cash flows											
Income		**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**
Wheat	165,000											145,000	20,000
Malt barley	72,450												72,450
Feed barley	115,000											60,000	55,000
Canola	310,000	110,000											200,000
Beans	150,000												150,000
Clover	21,000		10,000	11,000									
Chickpeas	37,500	17,000	20,500										
Prime lambs	170,000	40,000							20,000			55,000	55,000
Self-replacing merino	527,000	20,000						300,000	207,000				
Cattle	10,000		2,000		3,000			3,000			2,000		
Off-farm													
Other farm income													
Interest earned													
Cash													
Farm management deposits													
Total gross income	1,577,950	187,000	32,500	11,000	3,000			303,000	227,000		2,000	260,000	552,450
Expenditure													
Crop costs													
Seed	20,000		20,000										
Fertiliser	94,000	94,000											
Chemicals	128,000	128,000											
Insurance	5,500										5,500		
Fuel & oil	30,000	10,000		5,000						15,000			
R & M	20,000	10,000						10,000					
Cas lab	5,000				2,500						2,500		
Harvesting	10,500											10,500	
Livestock costs													
Purchases													
Wool packs	2,000						2,000						
Wool freight													
Shearing	54,000							54,000					
Flock costs	25,000						25,000						
Annual costs													
Supplementary feeding													
Pasture improvement	44,000		44,000										

cont. >

Table 5.1: 'Upndowns Farm' planned cash flow cont.

		Planned monthly cash flows											
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Overhead costs (general)													
Permanent wages	124,600	10,383	10,383	10,383	10,383	10,383	10,383	10,383	10,383	10,383	10,383	10,383	10,383
Admin and office	4,700	392	392	392	392	392	392	392	392	392	392	392	392
Accountant and book keeping	6,000		6,000										
Electricity	5,000		1,250			1,250			1,250			1,250	
Telephone	6,500	542	542	542	542	542	542	542	542	542	542	542	542
Insurance	25,000											25,000	
Registration	7,500	1,250		1,250		1,250		1,250		1,250		1,250	
Rates and taxes	22,500		5,625			5,625			5,625			5,625	
Fuel	10,000			5,000							5,000		
Repairs and maintenance	37,000	17,000							20,000				
Workshop supplies	3,000	250	250	250	250	250	250	250	250	250	250	250	250
Miscellaneous	5,000	417	417	417	417	417	417	417	417	417	417	417	417
Family cash drawings	87,000	7,250	7,250	7,250	7,250	7,250	7,250	7,250	7,250	7,250	7,250	7,250	7,250
Finance costs													
Existing farm loans													
Bank long-term debt	221,000												221,000
MX275 tractor	17,000											17,000	
Puma tractor	22,737		22,737										
Header	56,000			56,000									
Toyota Prado	12,900	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075
Existing off-farm loans													
Real estate													
Land lease + interest (other)													
Leased land													
Overdraft & stock mortgage	11,865		663	1,287	1,839	1,992	2,208	2,559	1,037		30	252	
Bank fees	300	25	25	25	25	25	25	25	25	25	25	25	25
Total costs	1,123,602	280,583	120,608	88,870	24,672	30,450	49,541	88,142	48,245	36,583	33,363	81,210	241,333
Net increase/ decrease in cash held	454,348	-93,583	-88,108	-77,870	-21,672	-30,450	-49,541	214,858	178,755	-36,583	-31,363	178,790	311,117
Cash held at beginning of period													
Overdraft at beginning of period													
Total cash at beginning of period			-93,583	-181,692	-259,562	-281,234	-311,684	-361,225	-146,367	32,388	-4,196	-35,559	143,231
Total cash at end of period	435,613	-93,583	-181,692	-259,562	-281,234	-311,684	-361,225	-146,367	32,388	-4,196	-35,559	143,231	454,348

A template to complete your cash flow budget can be downloaded at: **www.grdc.com.au/FBMtemplate-CashFlow**

Source: P2PAgri P/L

Different farmers use their own account categories, but read section **5.2.2, Allocating business costs,** before you draw up your list. In the cash flow expenses, include family drawings, as the cash flow needs to meet these costs. Note that family drawings is a category in overhead costs.

- **Finance section:** Loan repayments for bank loans, machinery related loans and vendor payments need to be entered. These payments include both the interest and principal repayments required by each loan.
- **Monthly result** (Net increase/decrease in cash held): Income and expenditure are totalled monthly, with the difference reported. There will be months when expenditure exceeds income and vice versa. This is the nature of a farming business.
- **Cumulative result** (Total cash at end period): The important part of a monthly cash flow is to monitor the on-going cash balance of the business which is shown in Table 5.1 in the last row 'Total Cash at end of period'. 'Upndowns Farm's' maximum use of the overdraft is estimated to occur in August at approximately $361k, and the business has a closing balance at the end of the year with a cash surplus of $454k.

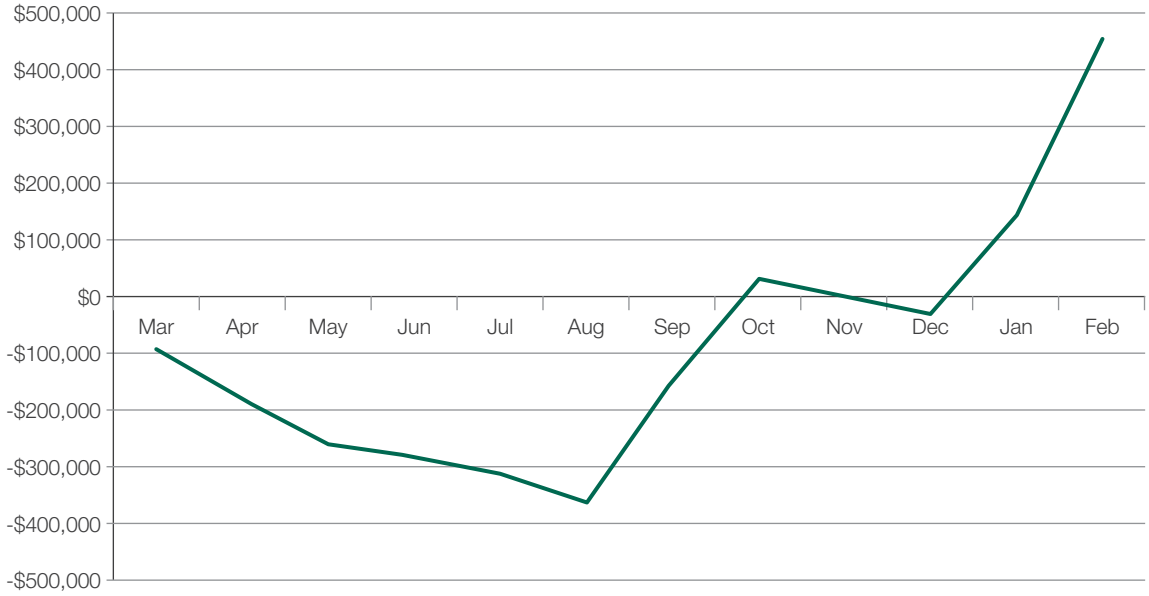
Figure 5.5 shows the 'lumpiness' of the monthly income and expenses, which is typical of a farming business. However, this pattern is dependent on the types of enterprises conducted in the business, as income and expenditure can occur at different times across the season. This is evident when the crop income is compared to the livestock income. Figure 5.6 illustrates the peak debt and when the business becomes cash flow positive again.

The estimated monthly cash flow in Figure 5.6 shows that this business is estimated to need an overdraft of $361k in August and should not require an overdraft from December onwards in this planning period.

Figure 5.5: Estimated monthly income and expenses

Source: P2PAgri P/L

Figure 5.6: Estimated monthly cash flow



Source: P2PAgri P/L

Table 5.2: 'Upndowns Farm' monthly cash flow for the first three months

	Planned	Actual	Planned	Actual	Planned	Actual
Income	**Mar**	**Mar**	**Apr**	**Apr**	**May**	**May**
Wheat						
Malt barley						
Feed barley						
Canola	110,000	70,000		45,000		
Beans						
Clover			10,000	9,568	11,000	10,567
Chickpeas	17,000	18,500	20,500	19,500		
Prime lambs	40,000	38,760				
Self-replacing merino	20,000	18,500				
Cattle			2,000	1,890		2,500
Off-farm						
Other farm income						
Interest earned						
Cash						
Farm management deposits						
Total gross income	187,000	145,760	32,500	75,958	11,000	13,067
Expenditure						
Crop costs						
Seed		18,500	20,000			
Fertiliser	94,000	60,000		30,000		
Chemicals	128,000	100,000		30,000		
Insurance						
Fuel & oil	10,000	10,567			5,000	
R & M	10,000	25,000				
Cas lab						
Harvesting						
Livestock costs						
Purchases						
Wool packs						
Wool freight						
Shearing						
Flock costs						
Annual costs						
Supplementary feeding						
Pasture improvement			44,000	40,000		

Cash flow continued >

	Planned	Actual	Planned	Actual	Planned	Actual
Expenditure	**Mar**	**Mar**	**Apr**	**Apr**	**May**	**May**
Overhead costs (general)						
Permanent wages	10,383	10,383	10,383	10,383	10,383	10,383
Admin and office	392	405	392	55	392	60
Accountant and book keeping			6,000	6,550		
Electricity			1,250	1,120		
Telephone	542	621	542	580	542	594
Insurance						
Registration	1,250	950			1,250	850
Rates and taxes			5,625	5,625		
Fuel					5,000	4,800
Repairs and maintenance	17,000	15,560				
Workshop supplies	250	234	250	180	250	350
Miscellaneous	417	280	417	550	417	560
Family cash drawings	7,250	7,250	7,250	7,250	7,250	7,250
Finance costs						
Existing farm loans						
Bank long-term debt						
MX275 Tractor						
Puma tractor			22,737	22,737		
Header					56,000	
Toyota Prado	1,075	1,075	1,075	1,075	1,075	1,075
Land lease + interest (other)						
Leased land						
Overdraft			663	744	1,287	573
Bank fees	25	25	25	25	25	25
Total costs	280,583	250,850	120,608	156,874	88,870	26,520
Net increase (decrease) in cash held	-93,583	-105,090	-88,108	-80,916	-77,870	-13,453
Cash held at beginning of period						
Overdraft at beginning of period						
Total cash at beginning of period			-96,133	-105,090	-186,129	-186,006
Total cash at end of period	-93,583	-105,090	-181,692	-186,006	-259,562	-199,460

Source: P2PAgri P/L

Figure 5.7: Estimated versus actual cash flow

Source: P2PAgri P/L

Step 2: Monitoring actual cash flow

- The next challenge for farmers is to actually monitor the monthly cash flow as the season unfolds. Table 5.2 shows the first three months of planned versus actual monthly cash flow for 'Upndowns Farm' and Figure 5.7 shows this as a graph.
- Monitoring throughout the season should be done monthly when the cheque account statement becomes available, or can be done quarterly in line with completing and submitting the Business Activity Statement (BAS) to the Australian Taxation Office (ATO).
- The results in Table 5.2 and Figure 5.7 are typical. The canola income has been delayed and some of the expenditure has also been delayed, resulting in the actual cash flow being better than the planned cash flow at three months.

Action points

- Put together a cash flow budget for your farm business, using any of the following: a spreadsheet such as EXCEL, accounting software, or a template.
- Do this budgeting yourself. Do not rely on a trained book-keeper or your accountant, as it will provide you with insight into the cash management of your business.
- The more experience you have with the cash flow process, the more your skills will improve.
- Be conservative when estimating your income to help manage risk.
- Download a template for a cash flow budget from: **www.grdc.com.au/FBMtemplate-CashFlow**

5.1.2 Accounting concepts for measuring liquidity

This section covers some key accounting concepts to follow when completing the cash flow budget.

- The **time period** – Monthly cash flows are usually completed on a 12-monthly basis, but there is nothing to stop you doing a two-year monthly cash flow. If you are doing it for farm management reasons, it is suggested you use a farming year, as you will capture the expenses and the income for the same seasonal period. For most mixed farms, this starts at the beginning of March, as this is when the bulk of the grain payments have come in and is before the next cropping season starts. It is suggested that you speak to your bank about this, as they may require a monthly cash flow for a specific time period.
- How **GST** is accounted for – As a general rule, GST is left out of farming budgets and financial reporting. This includes reporting in a tax return. However, GST does have implications to the cash flow, so if you want to do a detailed job with the monthly cash flow, include the estimated GST payments or income. This also means the income and expenses would need to be entered as GST inclusive. However, a lot of cash flows are done without GST, as GST essentially should flow through the business books and not be a cost burden to the business. The approach you use is your decision, but decide before you begin putting your cash flow together, and then use this approach consistently.
- It is helpful to align your tax **accounting categories** with your cash flow categories. The account categories in most farms tax book-keeping or accounting software systems are set up at the recommendation of their accountant. This is fine if all that is required from the financial monitoring in the business is to comply with the GST and ATO taxation reporting requirements. However, if you want to make the most of the financial information you are currently monitoring and turn it into more valuable management information, then slightly redefining the accounting categories can be very useful.

  The following sections will provide a better understanding of the different business costs and their uses, and why it is helpful to group different costs:

  > Section **5.2.2, Allocating business costs, Module 2**
  > Section **5.2.5, Enterprise gross margin budgets, Module 2**
  > Section **5.5.1, Financial ratios, Module 2**

  Once you have covered these sections, review your accounting categories and regroup them to more effectively report management efficiencies. Use categories that will help you plan and monitor the monthly cash flow.

- **Be conservative** with your budgeting – It is easy to make any budget look exceptional by using high yields, good prices and low costs. However, it is recommended that to effectively manage your business, use conservative budgeting rules i.e. use conservative average yields and prices, and slightly over-estimate your costs. If the cash flow budget is healthy under these expectations, then most of the negative experiences of poorer seasons, poorer commodity prices and cost overruns can be managed. It is also a healthy business practice to demonstrate to your bank that you have a clear understanding of the true financial performance of your business by showing that your planned cash flow reasonably reflects the actual cash flow at the end of the season. This will improve the bank's confidence in your business management skills and in turn should lead to a lower 'risk' component in your borrowing interest rates.

> Section **6, How banks lend to farmers, Module 3** addresses this issue in more detail.

5.2 EFFICIENCY

Knowing the efficiency of a farm business may be confronting, but once known, strategies can be put in place to help improve and maintain sound levels of efficiency. This helps to manage the long-term viability of a farming business.

KEY POINTS

- An efficient business has the greatest chance of maintaining long-term viability and sustainability.
- Knowing the efficiency of your business helps improve decision making and decreases the stress of managing a farming business.
- Knowing the efficiency of the business helps to know where to invest, both in and outside the business.
- A good farm business adviser can help assess the efficiency of your business. Most accountants and bankers will not be able to undertake this analysis.

Farm business efficiency is an important measure to help manage for long-term sustainability. The more efficiently a farm business is managed, the more likely you will be able to achieve the business' financial goals and have more positive business options in the future.

The key management concept of **Efficiency** (see Figure 5.8) is the focus for this section.

Efficiency is a measure of how well all the assets in the business are being managed and is the best measure to use when comparing against the performance of other farm businesses, and against businesses in other industries. Efficiency measures also provide a comparison against other forms of capital use, such as depositing cash assets in a bank or investing in the share market. If the farm business is earning more than it would if its equity were deposited in a bank, then there is clear reward for management effort. If a farming business does not monitor efficiency, it runs the risk of endangering long-term business sustainability.

Farm business efficiencies can be measured by the following process:

Step 1: Understand relevant accounting concepts (Section **5.2.1, Accounting concepts for measuring efficiency**).

Step 2: Understand your cost structures (Section **5.2.2, Allocating Business Costs**). This is essential as there are non-cash costs, such as depreciation, that need to be correctly accounted for within the efficiency measures.

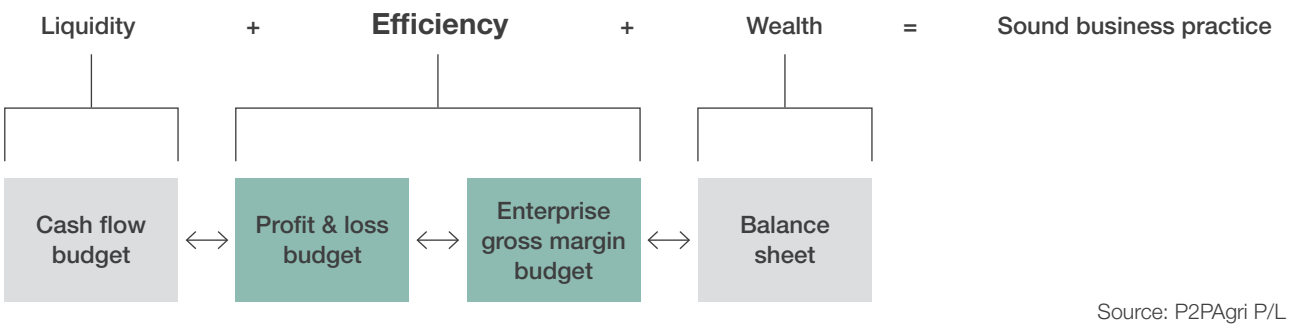
Step 3: Measure your profitability (Section **5.2.3, Profit and Loss Budget**).

Step 4: Measure your whole farm efficiency (Section **5.2.4, Whole Farm Efficiency**). Whole farm efficiency can be measured by combining information from the Profit and Loss budget, as well as the Balance Sheet (Section **5.3.1, Balance Sheet**).

Step 5: Measure the financial contribution of each enterprise to the business (Section **5.2.5, Enterprise Gross Margins**). Note that farm total gross margin is not profit, as no overhead or financial costs have been allowed for in gross margins.

Step 6: Measure your cost of production (Section **5.2.6, Cost of Production**). At what price do you need to sell your commodities in order to cover your cost of production?

Figure 5.8: Key management concepts: Efficiency



Source: P2PAgri P/L

5.2.1 Accounting concepts for measuring efficiency

When undertaking any budget used to assess efficiency, use the following accounting procedures to calculate the correct profit and loss for the season.

- **Accrual accounting** – When calculating the profit and loss budget (refer to section **5.2.3, Profit and loss budget**), more specifically EBIT (Earnings Before Interest and Tax), the objective is to line up all the costs and income from a production cycle. To do this, an accrual year is used. This means all that is produced in the season is valued, regardless of when the income is received, and all the costs of production for that season are used regardless of when they are paid. The production year's expenses are taken away from the production year's income, so an accurate profit can be calculated. This eliminates the ebbs and flows of an actual cash flow and provides a clear result for the farming year.

  A good example is the payment schedule of grain pools. When you deliver to a grain pool, it can take up to 18 months to receive the final payment. In a cash flow, the income is recorded in the month it is received. However, for a profit and loss, the full expected income from that grain sold to the pools needs to be included in the year of delivery to account for the true value of that season's production. The same is true for expenses. If you bought two years' supply of nitrogen fertiliser because it was a good price, but only use half in the current year, then only one year's worth of the nitrogen should be included as an expense in the profit and loss. This is called accrual accounting.
- **Depreciation** – The hidden cost of machinery ownership, known as depreciation is accounted for in a profit and loss budget. Recording depreciation is important as machinery loses value as it ages and wears out, and needs to be replaced over time. If the business cannot afford to replace machinery, it will eventually become non-viable. The term 'living off the depreciation' means that the business can only exist if it does not replace machinery when it is due. This is a quick route to becoming unviable.
- **Principal repayments** – The repayment of principal means liabilities are being paid off, which is a balance sheet entry (see section **5.3, Wealth**). While principal repayments are often necessary and are allowed for in a cash flow, when measuring return to owners' equity or net profit, only the cost of borrowing capital, the interest component of the repayment, is taken into account.
- **Managerial allowance** – In a cash flow, the owner tends to only take drawings to maintain the family's living requirements. However, to correctly measure efficiency, we need to accurately account for the true cost of all inputs to the operation of the business, including the operator's labour and management. The cost of a professional manager is generally greater than the drawings taken by the family. Another way of looking at this is to assess what it would cost to hire the necessary management to run the business for a year if the owner's management were not available, as this is the real cost of management. In 'Upndowns Farm', the family drawings are $87,000, but $120,000 has been allowed for as a true managerial cost. Even though only $87,000 cash is taken out of the business, the difference of $33,000 is allowed for and added to 'owners' equity'.
- **Farming year** – A profit and loss analysis is best completed using a production year, which can change from farm to farm. The Australian taxation financial year of July to June does not line up with the production year for most farms. For most grain farmers, the tax or financial year captures the income of one year against the costs of the following production year. To obtain an accurate view of the business, a production year has to be the focus. For most grain farmers, this would be from the start of production activities around March through to after harvest the following February. This enables the income and costs from the same production cycle to be assessed. For graziers, it could be from when lambing occurs, so an autumn lambing year could be May-March. For an intensive agricultural business like pigs or poultry, the financial year of July to June could work well. For a horticultural business, the farming year could start a month after harvest is completed, or before pruning starts. It is your choice, but it is important to have this ideal farming year in your mind as the basis for your budget reporting.
- **Goods and services tax (GST)** – The GST, introduced into the Australian economy in 2000, is a tax on the end consumer. The GST collected on income and added to expenses should flow through the business and not be a cost burden on the business. The GST does have cash flow implications even though it affects cash flow at different times. In some quarters, GST needs to be paid while in other quarters, GST compensation is paid back by the Australian Taxation Office (ATO). When undertaking any budgeting for farm business management, only GST exclusive numbers are used, i.e. income and costs without GST. If you use software accounting systems, you should be able to get income and expenses reports with both GST inclusive or exclusive numbers. Use the GST exclusive numbers.

5.2.2 Allocating business costs

Understanding your costs and having meaningful accounting categories will help you to monitor efficiency of your business for management decision making, rather than just taxation measures.

KEY POINTS

- Streamlining accounting categories will make monitoring and reporting on financial performance more efficient.
- Not understanding the costs of your business can be catastrophic for sustainability.
- Understanding why costs are grouped will assist with enterprise analysis and business decision making.
- Costs tend to increase over time – review them regularly and look for savings.

Co-contributor to this section: Tony Hudson, Hudson Facilitation.

Understanding which category a cost should be allocated to is the starting point to accurately assessing the profitability of the various enterprises you run (or may run in the future), and also your overall business profitability and financial efficiency. Costs are handled slightly differently between the cash flow budget, profit and loss budget, and gross margins.

Farm businesses costs can be classified into five categories:

- Operating:
  1. Variable Costs (input costs)
  2. Overhead Costs (fixed costs)
  3. Finance Costs
- Non-Operating:
  4. Personal Costs and
  5. Capital Costs

Note: When considering these costs, **GST is not included**, so costs used should be **GST exclusive**.

Source: P2PAgri P/L

1. Variable costs

Variable costs are those costs which can be quite clearly attributed to a certain enterprise and which increase as the scale of the enterprise increases. Consider the cost of canola seed, for example. If you grow canola, purchasing canola seed is clearly attributable to the canola enterprise. The more hectares of canola you grow, the more seed you require and the higher the outlay on canola seed becomes. Another example would be shearing cost. Again, shearing costs are needed for the sheep enterprise, and the more sheep you manage, the higher the shearing cost.

Table 5.3 provides a checklist of some of the most common variable costs for cropping and livestock.

The dynamics of these variable costs can vary. Some variable costs affect yield, with fertiliser on crops being the most obvious, followed by seeding rate and chemical costs. Other costs are yield dependent and increase as yield increases, such as freight, harvest and marketing costs. Others do not change greatly regardless of yield, but the enterprise could not be undertaken without them. These include fuel and repairs and maintenance costs.

Table 5.3: Common variable costs

- Sowing
- Seed
- Spraying
- Harvesting
- Windrowing
- Fertiliser
- Herbicide
- Contractors
- Fungicide
- Insecticide
- Shearing
- Crutching
- Drenching
- Marking
- Freight
- Marketing
- Irrigation water costs

Source: Hudson Facilitation

Valuing inputs provided by the farm

When considering the variable costs for an enterprise, you also need to consider those inputs that the farm may provide. For example, when sowing a wheat crop, wheat seed may have been retained from the previous season rather than needing to be purchased and will therefore not appear in your cash flow. However, this cost needs to be considered as you could have sold that seed after harvest, so it has a value. Economists say it has an **opportunity cost** which is the value for which it could have been sold. So when considering the variable costs for growing wheat, the seed used should be costed at the price it could have been sold for during the last harvest.

This concept is the same for livestock. For example, in the case of a sheep enterprise, older ewes from the self-replacing merino flock may be crossed with a British ram to get a first cross lamb, or prime lamb. In a cash flow sense, these older ewes are not sold from the self-replacing merino enterprise and then purchased by the prime lamb enterprise. However, when comparing variable costs between these two sheep enterprises, the cost of the older ewes needs to be accounted for. In the variable costs of the prime lamb enterprise, the purchase cost of these older merino ewes coming into the prime lamb enterprise needs to be taken into account. Likewise in the self-replacing merino enterprise, these older merino ewes should be shown as income. This will enable you to accurately compare the gross margins between the self-replacing merino and prime lamb enterprises. Sheep movements in and out of the flock are more accurately assessed in livestock reconciliation.

Similarly, the price of supplementary feed that is grown on the property and then fed to the livestock enterprises should be costed in the respective livestock enterprise to gain an accurate gross margin comparison. This supplementary feed should be valued at the price for which it could have been sold.

› Section **5.2.5, Enterprise gross margin budgets, Module 2** covers this in greater detail.

Value of knowing your variable costs

It is important to know the variable costs per hectare for any given enterprise for four reasons:

a. **To select the most profitable enterprise mix:** Calculate the enterprise gross margin per hectare and compare various enterprises for likely profitability in order to select the most profitable enterprise mix given environmental, market and agronomic issues.

b. **To calculate working capital needed:** Calculate the amount of working capital required to farm a certain number of hectares of a certain enterprise.

   For example, consider the option of growing more canola instead of wheat next season. If we assume variable costs for growing canola are $375/ha and for wheat, $333/ha, canola is $42/ha more expensive than wheat. The decision to grow an additional 500ha of canola instead of wheat will tie up a lot of working capital:

   Additional Variable Costs: $42/ha x 500ha = $21,000.

   The decision to grow canola may appear more profitable over the year, but input costs leading up to harvest and sale may place significant strain on the business cash-flow, so it is important to ensure you have access to adequate working capital.

c. **Sensitivity analysis:** Variable costs can be used to consider enterprise profitability sensitivity to price, yield and variable costs.

   The enterprise gross margin per hectare is calculated by:

   Gross Margin = (Yield x Price) - Variable Costs

   This calculation helps to assess the effect of changing any of these variables on the gross margin. It demonstrates where management should be more focused in order to achieve higher gross margins. For example, assume a canola crop has the following:

   Yield @ 2.2t/ha
   Price @ $520/t
   Variable Costs @ $375/ha

   Therefore, this Canola Gross Margin = ($520/t x 2.2t/ha) - $375/ha = $769/ha

   In this example, a 5% decrease in variable costs without reducing yield would mean the new variable cost is $356/ha. This would result in the canola gross margin now being $788/ha, an increase of $19/ha or a 2.5% increase in the expected gross margin. Note that adjustments of variable costs are also related to yield performance and sometimes grain quality. So decreasing variable costs could also have a negative impact on yield and grain quality.

d. **Comparison with other farmers** – If enterprise gross margins are used as a comparison between farms in the same area, then the differences could be in the price achieved, the realised yield and the variable costs, or more likely a combination of all three. If you are in a farmer discussion group, comparative analysis would be a valuable exercise to do, but ensure that the data is collected in the same way on each farm. In other words, compare 'apples with apples'! Also, drill down so that differences in price, yields and variable costs are recorded. You will do a lot of learning. Be aware that soil type and the season experienced by each farm can also cause differences in gross margins.

> Growing the highest yield in the district may feel good at the pub, but growing the most profitable crop will always win in the end!

HOW TO CALCULATE VARIABLE COSTS

Some approaches to calculating these costs for your business are as follows:

a. Seed:

When completing farm business management budgets and comparing enterprise gross margins, all inputs need to be valued, even if they are produced on the farm. Seed therefore needs to be valued even though it came from last year's harvest.

Use last harvest actual market prices, the grading and pickling costs, and sowing rate to calculate this figure. You will need to do this calculation for each crop.

Seed cost ($/ha) =
(Farm gate seed price ($/t) + Pickling cost ($/t) ÷ 1000)
x seeding rate (kg/ha)

Example:

Seed cost ($/ha) = ($200/t + $75/t ÷ 1000) x 65kg/ha
= $17.88/ha

b. Fertiliser:

You may have an understanding of this cost from computer programs. If not, there are two alternative methods you can use:

1. If area cropped and fertiliser prices are similar to the previous year, use last year's bill and divide by the area (ha) cropped.
2. Calculate the price of each fertiliser used (Urea, Super, MAP, DAP, Hi Analysis etc.) and the application rate used in order to calculate the cost per ha. Do this calculation for each crop as you may have treated each crop type differently.

c. Chemical:

Calculating chemical costs is a little more involved, but is similar to fertiliser. Again, there are two methods you can use:

1. If area cropped and chemical prices are similar to the previous year, use last year's bill and divide by the area (ha) cropped.
2. Calculate the price of each chemical used and the application rate used to calculate the cost per ha. Do this calculation for each crop as you may have treated each crop type differently.

d. Insurance:

Crop insurance cost is not a large cost, but still needs to be assessed.

1. If the cropping program this year is similar to the previous year, use last year's crop insurance bill and divide by the area (ha) cropped this year.
2. Use the per $1,000 crop value on your crop insurance documentation. Using that rate, estimate the gross income per ha to calculate the crop insurance premium.

e. Fuel and oil:

This can be a challenging cost to calculate, as most farmers do not keep good fuel consumption records, and the fuel rebate must be calculated. Fuel is a major cost and needs to be calculated correctly:

Step 1: Take your off-road fuel bill of last year and subtract the fuel rebate. The current fuel rebate is about $0.38/l, so if your diesel price is $1.30/l, your price is $0.92/l, or 29% rebate savings. So, if your fuel bill (GST excl.) was $20,000, the cost to you is $14,200 (20,000 x (100%-29%)).

Step 2: Estimate what percentage of this fuel was used for cropping. That is, for sowing, spraying and harvest. If it is 80%, then the cost to the cropping program using the number above is $11,360 ($14,200 x 80%)

Step 3: Divide this fuel amount by the total cropping program last year. If you are cropping 500ha, the fuel cost in this example is $22.72/ha ($11,360 ÷ 500ha).

f. Repairs and maintenance:

This is the cropping machinery repairs and maintenance estimated on a per ha basis. If you do not know this number, use the following method:

Step 1: If you expect these costs to be similar to the previous year, use last year's crop R&M bill and divide by the area (ha) cropped.

Step 2: Review this figure to see if you had any large, unexpected R&M cost. If you did, then average the costs of the last few years to get an average figure.

g. Casual labour:

Permanent labour is handled as overhead costs (fixed costs). However, if you hire casual labour e.g. for seeding, spraying, harvest and/or shearing, it is a variable cost.

Divide your casual labour cost (include WorkCover and superannuation) by the cropped area for which you used the labour. For example, you may have only used labour for the cereals and not the grain legumes. So only the cereals should have casual labour included as a variable cost.

h. Shearing costs:

This cost can be:

- Piecework rate, which is an industry rate for shearing different types of animals such as lambs, adult sheep and rams. You will also need to allow for shed hand casual rates; or
- Contract rate, which combines shearing, wool preparation and baling.

Generally, these expenses can be obtained from industry recommendations and awards, or by looking at the most recent tax return, as they should be listed as a specific account category.

i. Crutching costs:

Use either of these methods to calculate this cost:

1. Use industry recommended crutching price per head.
2. If this year's sheep numbers are similar to the previous year, use last year's crutching bill (GST excl.) and divide by the number of sheep crutched.

j. Drenching costs:

Use either of these methods to calculate this cost:

1. If this year's sheep numbers and the price of drench are similar to the previous year, use last year's drenching bill (GST excl.) and divide by the number of sheep crutched.
2. Calculate the price of the drench and rate per head to obtain a cost per head.

k. Marking costs:

Use either of these methods to calculate this cost:

1. If this year's sheep numbers and expected marking costs are similar to the previous year, use last year's marking bill (GST excl.) and divide by the number of sheep weaned.
2. Use the industry recommended marking price per head.

l. Freight costs:

You may have a freight bill for both grain and livestock:

1. If this year's freight costs (GST excl.) for grain and livestock are expected to be similar to the previous year, use the respective numbers and allocate them appropriately to each grain and livestock enterprise.
2. Use last year's freight costs and adjust for the variation in this year's grain and livestock production.

m. Marketing costs:

Use either of these methods to calculate this cost:

1. If this year's marketing costs (GST excl.) for grain and livestock are expected to be similar to the previous year, use the respective numbers and allocate them appropriately to each grain and livestock enterprise.
2. Use last year's marketing costs and adjust for the variation in this year's grain and livestock production.

n. Irrigation costs:

- If this year's water costs (GST excl.) are expected to be similar to the previous year, use last year's irrigation bill (GST excl.) and divide by the area (ha) cropped for the season.

o. Other:

- There could be other variable costs that have not been allowed for. This could include contract haymaking, windrowing canola or spraying costs. Use the contract rates to calculate these variable costs.

2. Overhead costs

Overhead costs are those that generally do not change with the amount of output produced from a given business. Overheads do not vary greatly between years. They relate to the farm business as a whole and are irrespective of what mix of enterprises is undertaken, or the productivity of those enterprises. Table 5.4 lists many of the common overhead costs which relate to farm businesses.

For most businesses, it is difficult to change overhead costs in the short-term. However, assuming the intent is to maintain assets and continue trading, they must be met regardless of how land is utilised. Knowing what overhead costs will be for a year is important for good budgeting. The size of the overhead identifies the minimum total gross margin a farm must generate in order to break-even.

As with other types of costs, overhead costs can be compared with other similar producers to gain an understanding of the efficiency of the business. A major hidden cost is the overhead cost of depreciation which derives from the amount of capital invested in machinery, equipment and fixtures.

Table 5.4: Common overhead costs

- Council rates
- Permanent wages
- Work-cover
- Superannuation
- Farm insurance
- Registrations
- Repairs & maintenance
- Accounting
- Utilities (phone/power)
- Subscriptions
- Travel
- Training
- Fuel
- Professional fees
- Depreciation
- Employee wages
- Employee superannuation

Source: Hudson Facilitation

Section **5.2.6, Cost of production, Module 2** discusses the allocation of overhead costs to an enterprise and how these contribute to your cost of production.

Where to find your overhead costs

The financial records you keep for your tax accounting is a good place to start to look for records of the costs of overheads. Your last tax return should have these costs listed in the expenses part of the profit and loss schedule. Another place to look is your accounting software and assess the last 12 months of cost data.

Depreciation is the hidden cost of machinery ownership and can be difficult to determine. It has to be estimated based on expectations about current market value and the productive life of an asset. Effectively, it is the annual value lost in capital tied up in machinery in a year. If you value all the machinery owned by the farm at the beginning of the year as $2m and you value this set of machinery at the end of the year at $1.8m, the difference in depreciation is $200k. As a percentage, this is a drop in value of 10%, which is known as the depreciation rate. As 'a rule of thumb', a diminishing balance depreciation rate of between 8% - 10% is used in the grains industry for the main items of powered machinery. Newer plant tends to depreciate more rapidly in the early years compared to later years, so this would be closer to a 10% depreciation rate.

Reducing overhead costs

Overhead cost can be reduced in two ways: by cutting total overheads for a given level of total production, or by increasing total production for a given level of overheads. Reducing total overhead costs, and overhead costs per unit of output can be difficult in the short-term but it is certainly not impossible. Indeed, while most farmers are very focused on their input costs and do not like to see a dollar wasted on sprays, fertiliser and so on, far fewer regularly and seriously review overhead costs to identify potential savings. Savings can be made in the following areas:

1. **Capital investment in plant and machinery** – Are you matching the capacity of the plant and equipment with the business output? Over capitalisation means increased capital costs per unit of production.
2. **Farm insurances** – What are you actually insured for and is it appropriate?
3. **Repairs and maintenance** – Are these costs all legitimate R&M or are some of them capital or lifestyle choices and should be treated as such?
4. **Depreciation** – Are you relying on the figure your accountant calculates (undertaken with ATO rules and may not be accurate for management) or attempting to utilise a more realistic market value figure?
5. **Communications** – Are there lower cost options for phone/internet combinations?

One common way of reducing overhead costs per hectare is to increase the scale of your operations, to spread the major overhead costs of operations, such as labour, management and depreciation of plant, over more output. This is typically done by either purchasing, share farming or leasing more land. Although this will usually mean that the total overhead costs the business pays will increase, many of these costs, such as accounting, utilities, rates if leasing land, travel, training, depreciation and so on, may not change with increased scale.

In this instance, while there will likely be an increase in total overhead costs, the overhead costs per hectare should decrease, as should overhead costs as a percentage of gross revenue. The business will achieve greater overhead cost efficiency by gaining what is known as Economies of Scale.

3. Finance costs

Finance costs include interest payments on term loans, equipment finance and overdraft. However, it is important to understand that finance costs include only the interest component of any repayment. If you are paying off a loan in principal plus interest repayments, the principal component of the repayment is reducing the business liability and is not a finance cost.

Borrowing money to buy land is an example. Most farmers do not have adequate cash reserves to purchase additional land, and so borrow money from a bank. The interest payable on that loan is the cost the bank charges for using their money to provide you access to that additional land. Similarly, finance payments include any land leasing costs. As with interest, lease payments provide the farmer with access to assets which they could not otherwise access.

4. Personal costs

This is the family drawings from the cash flow, or the annual cash needs for maintaining the family(ies) associated with the business. This is probably the cost item least recorded in the farm business as this is not a tax deductible item and does not need to be recorded for tax purposes. However, the family need to live and so it is a legitimate management cost to the business, so record what the family needs to support its lifestyle. These items include food, personal items, medical expenses, education expenses and holidays.

The issue of family drawings and market value of management to the business is an issue that should be considered.

Section **5.2.4, Efficiency of the whole business, Module 2,** discusses this issue further.

Typically, personal costs are lifestyle related and have little impact on business productivity. However, they are an unavoidable cost to any family business and the amount of annual drawings will obviously affect both the quality of life of the owners of the business, and the amount of cash left to either reduce debt or reinvest in the business.

5. Capital costs

Capital expenditure is cash spent on assets out of cash flow. They do not appear in the profit and loss budget as capital purchases add to the assets in the balance sheet. However, capital purchases from cash can have a major impact on cash flow. Ideally, capital expenditure should improve the productive potential of the business. However, this is not always the case. Typical capital expenditure includes the purchase and/or development of land, buildings, machinery, breeding livestock and principal repayment of debt. Essentially, a capital item is anything that is added to the asset value in the balance sheet.

Asset values are discussed further in section **5.3, Wealth, Module 2.**

Machinery requires periodic replacement and not all capital expenditure will lead to improved productivity. A useful approach to capital expenditure is to prepare budgets based on sound assumptions of likely outcomes both with and without the proposed capital expenditure, so at least you are aware of its impact before making the decision.

This is discussed in section **11, Analytical tools, Module 3.**

Comment on costs

All costs tend to increase in real terms over time and so farm productivity must also improve over time to keep pace. Many costs are directly responsible for productivity and these must be monitored carefully, but it is important not to sacrifice productivity and gross revenue in the endeavour to cut costs. The focus should be on maintaining and improving profitability. There are often a number of areas in any business where, either with a review of costs or by increasing scale, greater cost efficiencies and production increases can be achieved.

Some complexities in categorising costs

Some costs can be allocated to different categories as they are used for different roles. Common cost challenges include:

a. How are labour costs handled?

Depending on the context, labour costs can be categorised as any of the following:

- **Variable costs** – Labour costs are a variable cost where they can be attributed to a particular enterprise. A good example is shearing labour costs attributed to sheep and contract windrowing to canola. As a general rule, labour costs are variable costs when they are contract or casual labour.
- **Overhead costs** – Labour costs are overhead costs when the labour is used over multiple enterprises. Generally, overhead costs are hired permanent labour, whether they are full or part-time employees.
- **Drawings** – This is the money needed by the owner to cover living expenses. Most farmers see this as adequate recompense for their labour and management input to the business, which allows the business to retain as much capital as possible. They are effectively investing their operator's labour and management return back into the business. However, this does not value their labour and management at commercial rates.

b. How are livestock purchases handled?

Purchased livestock through the season can be classed as either:

- **Variable costs** – Livestock purchases are variable costs when they are a normal annual cost for those enterprises. Examples include ram replacements for a self-replacing merino enterprise, breeding ewe replacements for a first and second cross prime lamb enterprise, and animals purchased for a feedlot where the animals are being held for less than 12 months.
- **Capital purchases** – Livestock purchases are classed as capital purchases when they are a one-off purchase to increase the size of that particular livestock enterprise. An example is the purchase of 1000 merino ewes for the self-replacing merino enterprise, so that this enterprise can be expanded. As these animals will be retained for a number of seasons to help increase income, and can be sold again, they are classed as a capital purchase and their value is added to the balance sheet (see section **5.3, Wealth, Module 2**).

c. How are costs managed in order to improve business returns?

Good cost management is central to running a profitable farming business. However, it is not just about reducing costs; it is about allocating those costs to provide the best profits for the business.

Section **3, Farm business management, Module 1** discusses this economic thinking.

Action points

- Using your last tax return or a profit and loss budget from your accounting software, allocate your costs to the 5 categories listed above.
- Choose a method to allocate overhead costs that suits your particular mix of enterprises. Make sure you use this same method each year.

5.2.3 Profit and loss budget

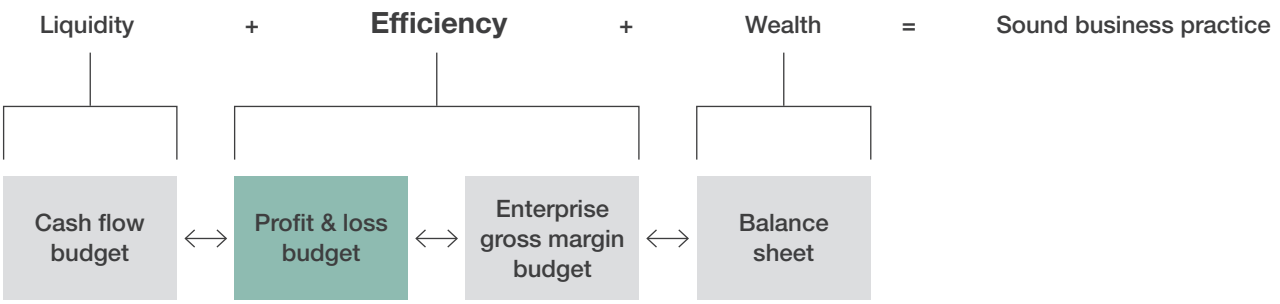
How much profit is your farming business making?

Maintaining a sound business management discipline of measuring business performance, using this information for planning and then learning from each year's results, will help to maintain a healthy and sustainable business. Understanding your profit and loss budget is essential to this process (refer to Figure 5.9).

KEY POINTS

- Profit and loss is the true measure needed to determine long-term business sustainability.
- Profitability is not the same measure as cash flow.
- Profitability is a key measure to help assess farm efficiency.
- Farm management profit and loss is not the same as the profit and loss statement in your tax return.

Figure 5.9: Key management concepts: Profit & loss budget



Source: P2PAgri P/L

What is a profit and loss budget?

In farm business management, a profit is the measure of the financial gain the whole business has made in a year's operation. It is not identical to a cash surplus, as measured by a cash flow, but can be similar. A profit and loss budget is a measure of business performance in terms of income, costs and the use or retention of unsold goods. Measured profit is an essential part of the efficiency equations, where profit divided by total managed assets provides the essential 'return on managed capital' measure. This measure of business efficiency can be used for comparison with any other business in the economy. It is the major comparative benchmark when assessing business performance.

Some farmers are more concerned with cash flow than profit, but understanding business profitability and efficiency is just as essential as cash flow and liquidity. If the business focus is on future sustainability, responsible management needs to include an annual profit and loss budget to measure efficiency accurately. Figure 5.10 illustrates the various components of a profit and loss budget.

There are different levels of profit measures (Figure 5.10):

- Total Gross Margin,
- Operating Profit or Earnings Before Interest and Tax (EBIT),
- Farm Net Profit (FNP) before and after tax, and
- Farm Growth in Equity.

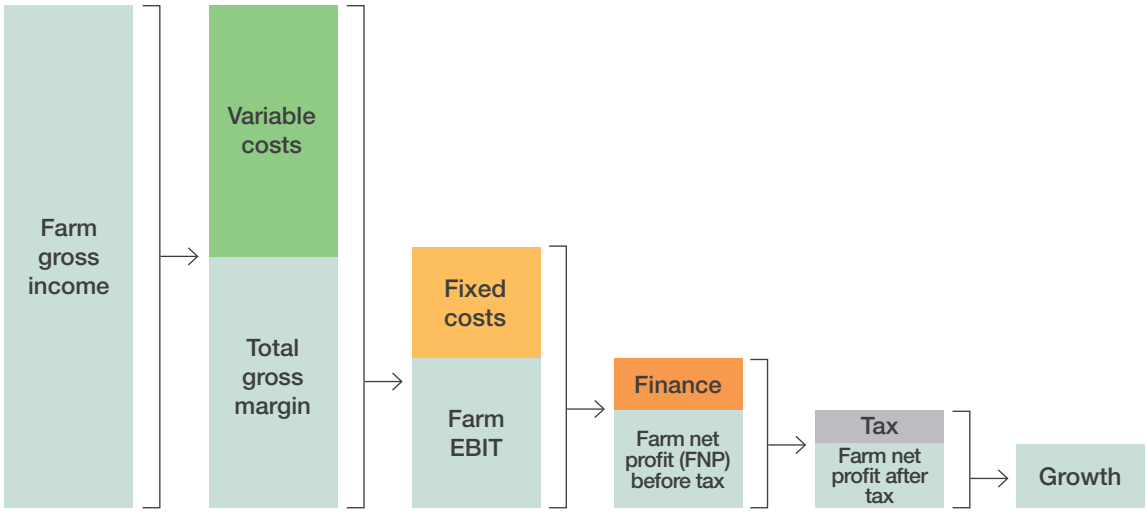
Each of these measures tells something different about the performance of the business in light of family goals. Understanding and measuring each of these enables various questions about the business to be answered.

The ultimate goal of a farming business each year should include a growth in equity (also called net worth or wealth). This is the measure that shows if the business is moving ahead or going backwards. Growth in equity is obtained from both:

- The business profits after debt is serviced and tax paid, and
- Growth in the assets owned, such as land.

A valuable measure of the performance of the business and its management is the business profits achieved from the capital managed and the growth in equity derived from farming, as this is directly influenced by management. Growth in equity from owned asset growth (mainly land value increase) is valuable too, but is more a reflection of the health of the rural economy than the actions of management.

Figure 5.10: Profit and loss budget



Source: 'Agriculture in Australia', Bill Malcolm, et al, 2009

'Upndowns Farm' profit and loss budget

'Upndowns Farm', a dryland mixed farm, has the following asset data:

- Total assets managed = $13.9m
- Total assets owned = $11.1m
- Total liabilities = $2.9m
- Net worth (total assets owned minus liabilities) = $8.2m

A profit and loss budget based on this data is shown in Table 5.5.

Efficiency calculations are also based on this data.

Section **5.3, Wealth, Module 2,** discusses this information further.

Results indicate that this farming business has generated a net profit before tax of $350,334. Technically, this farm is economically viable given an average season expectations. To really test this farm's economic viability, both a good and poor season need to be modelled to see the range of outcomes.

Information obtained from a profit and loss budget

The main observations coming from a profit and loss, illustrated by the sample farm, are as follows:

1. **Farm gross income:** This is the gross income received from each farm enterprise as well as the non-cash income, which could be the abnormal increase in stock numbers where flock or herd building is occurring. This increase in stock is valued as non-cash income, as these animals are not normally retained. Also, please note this is accrual income, so all sold commodities are valued as income regardless of when the full cash payment is received.
2. **Farm EBIT:** The farm's earnings before interest, leasing and tax (EBIT) are taken into account and is a number that can be compared with other similar businesses. The higher the EBIT, the better the business performance; if this number was negative, farm viability would be in doubt. More importantly, it is also the profit number used in the calculation of efficiency, or return on managed capital. Table 5.5 indicates the sample farm's EBIT is $616,019. While this appears quite a reasonable result, remember that interest, leasing and tax payments have not yet been removed, so it may not in fact be a very positive result.
3. **Farm net profit before tax:** This is the profit to the farm business once all cash and non-cash costs, depreciation and finance costs have been accounted for. In Table 5.5, this figure is $350,334; this indicates that this business is profitable, but whether this level of profit is good or not depends on how much capital has been used to produce it i.e. return on capital measures the whole farm efficiency. Regardless of the profit level, it is always useful to ponder how the business would cope with the inevitable low profit years.
4. **Farm net profit after tax:** This is the farm's net profit after tax liability has been taken out. Assistance from your accountant may be needed here to assess this season's tax liability as this will depend on things such as business structure, carried forward losses and taxable income averaging. 'Upndowns Farm' net profit after tax is $315,301. This is positive and means the business can probably meet its costs and interest and tax obligations, though only the cash flow budget can tell us for sure.
5. **Farm growth in equity:** This is the profit that remains and is in addition to equity. It is the surplus available to put back into the business as either infrastructure up-grade or repayment of principal. Either way, it helps build the owner's equity. The sample farm 'Upndowns Farm' has a growth in equity of $336,301.

Action points

- Complete a profit and loss budget for your last season.
- Once you have completed the balance sheet in section **5.3.1, Balance Sheet**, come back to your profit and loss and calculate the various returns to capital.
- Access a profit and loss template from: **www.grdc.com.au/FBMtemplate-ProfitLoss**

Table 5.5: 'Upndowns Farm' profit and loss budget

Profit measures		Discussion
Farm management profit and loss:		
Cash income:	**Annual**	**Farm gross income** • Farm gross income is simply all income earned in the business year (accrual), and can include: 1. Each commodity sold by the farm business. 2. Other income earned from the use of the farm's assets, such as providing contract spraying and windrowing. 3. Wages earned off-farm, such as shearing for other farmers in the district. • **Non cash income** – This is for production that would normally have been sold, but in this instance has been retained. This can occur in both grain and livestock enterprises. An example would be if more ewe lambs were retained to build up breeding ewe numbers making the number greater than at the start of the season.
Wheat	164,250	
Malt barley	72,450	
Feed barley	115,020	
Canola	312,312	
Beans	150,575	
Clover	21,000	
Chickpeas	37,500	
Prime lambs	171,819	
Self-replacing merino	526,703	
Cattle	10,500	
Other farm income		
Non cash income:		
Net livestock movements		
1. Farm gross income	1,582,129	
Expenses:		
Cash production expenses:		**Expenses** in a profit and loss are attributed to various categories so that profits can be viewed at different levels. These categories are: • **Cash expenses** – Those costs that are paid for annually, like crop and livestock variable costs, and overhead costs. • **Non-cash expenses** – These are costs that are incurred but may not have been paid in full, such as the management allowance, or depreciation of machinery which occurs over time.
Cropping variable costs	309,436	
Livestock variable costs	218,574	
Other farm expenses		
General overhead costs	256,800	
Non cash production expenses:		
Managerial allowance	120,000	
Depreciation	61,300	

2. Farm EBIT	616,019	
Financing costs:		
Interest:		• **Financing costs** – These are the costs associated with borrowing money, namely interest rates and bank fee charges. In this example, the income from bank deposits and farm management deposits (FMD) has been included as income.
Interest on existing farm loans	242,435	
Interest on new farm loans		
Interest on overdraft and stock	22,950	
Mortgage:		
Bank fees	300	
Land lease		
Interest earned on cash		
Interest earned on FMD		
3. Farm net profit before tax	350,334	**Key performance indicator: Farm viability**
Tax costs:		
Tax rate	10%	• **Tax costs** – Most profits and losses are assessed prior to tax, but as tax paid to the ATO is a legitimate business cost, this is included in the profit and loss budget.
Less losses carried forward		
Taxable income	350,334	
Farm estimation of tax paid	35,033	
4. Farm net profit after tax	315,301	
Farm consumption:		
Family drawings minus Managerial allowance	33,000	**Farm consumption** – This is a little technical but it helps to measure what is being put back into the business by the family farm owners. • In this sample farm, a manager/owner is taking a family drawing of $87,000 and has allowed for $120,000 in the profit and loss for the managerial allowance. So, while it is acknowledged that the manager/owner is worth $120,000, only $87,000 is being taken out for living expenses. This means the difference of $33,000 is being left in the business and can be classed as invested equity. • Farm business management calls this value 'farm consumption'.
5. Farm growth in equity	336,301	**Key performance indicator: Growth in farm equity**

A template to complete your profit and loss budget can be downloaded at: **www.grdc.com.au/FBMtemplate-ProfitLoss**

Source: P2PAgri P/L

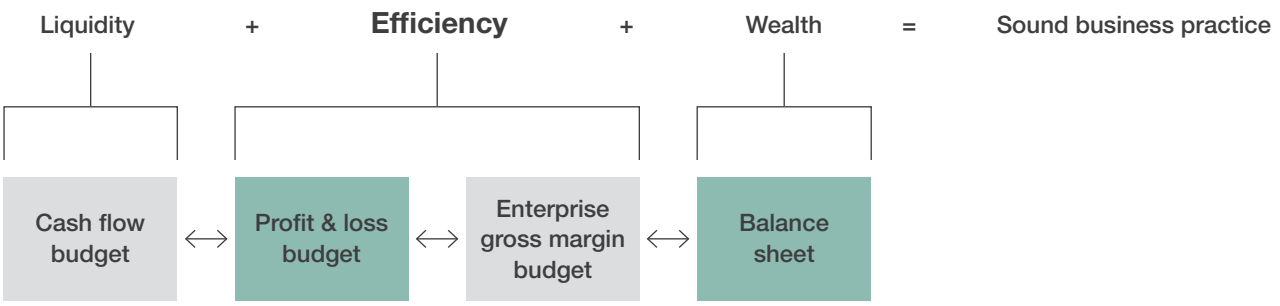
5.2.4 Efficiency of the whole business

One of the keys to success is knowing how efficient your business is, and continually striving to improve business efficiency.

KEY POINTS

- Efficiency is the measure of how well you are managing the total assets used by the farm business.
- To measure efficiency, you need to know the business profitability and the value of assets being managed.
- Efficiency is measured by the return on total assets managed, and is the only benchmark that provides a correct comparison between farming businesses and other businesses in the economy.
- Business decision making is greatly enhanced with a focus on the improving efficiency.

Figure 5.11: Key management concepts: measures for whole business efficiency



Source: P2PAgri P/L

Why look at efficiency?

Most farmers rely on business cash flow to determine how well the business is performing. While this is a good measure of liquidity, or cash available to the business, the measure of efficiency should not be ignored as it accounts for non-cash income and costs that are not assessed in a cash flow. Allowing for these items, such as hidden costs like depreciation, means that the true profit performance is revealed. This helps maintain viability into the long-term (refer to Figure 5.11).

The measurement of efficiency is the measure of how much profit is generated by all the assets (also known as capital). However, there are other important measures of efficiency, which help answer different questions about the business. The two essential measures of efficiency are shown in Table 5.6.

The figures needed to complete these efficiency measures come from both a profit and loss, and a balance sheet.

Calculation of these efficiency measures using 'Upndowns Farm' figures

For this exercise, the sample farm has $11.1m in owned assets, with a further $2.8m of land that is share farmed. While the share farmed land is not on the business balance sheet (covered in section **5.3.1**) it is a part of the total assets being managed, which comes to $13.9m ($11.1m + $2.8m).

To complete the efficiency measures of the whole business, specific calculations from **'Upndowns Farm'** Profit and Loss, and Balance Sheet, have been used and are shown in Table 5.7.

1. **Return on managed capital (ROMC)** – This is the return on total assets managed by the farm business (including leased and share farmed land) and is the preferred indicator of business efficiency. A figure greater than 8% indicates an efficient farm business. This is calculated by:

   ROMC = Farm EBIT ÷ Total assets managed

   In the sample farm, the farm EBIT of $616k divided by the total assets managed of $13.9m, gives a ratio of 4.43%, before any increase in asset value from market movements. This is well below the efficiency mark of 8% that other good businesses (farm and non-farm) would consider a sound level of performance, so there is plenty

Table 5.6: Measures of efficiency and return to owner's capital

Efficiency measures	Question that is answered
1. Return on managed capital (ROMC)	What is the efficiency of the business? This is the correct measure of efficiency as it measures the return from all the assets being managed, and not just the owned assets. Industry would regard a return on total managed capital of 6% - 8% to represent an efficient operation.
2. Return on owners' equity (ROE)	What is the return on the owner's equity? This measure identifies the return on the owner's equity in the business and can be compared to alternate returns on investment, such as depositing this equity in a bank. If the bank deposit was earning 4%, then the farm business would be looking for a return on equity above this to reward risk taking, as a farm business manages more risk than a deposit in a bank.

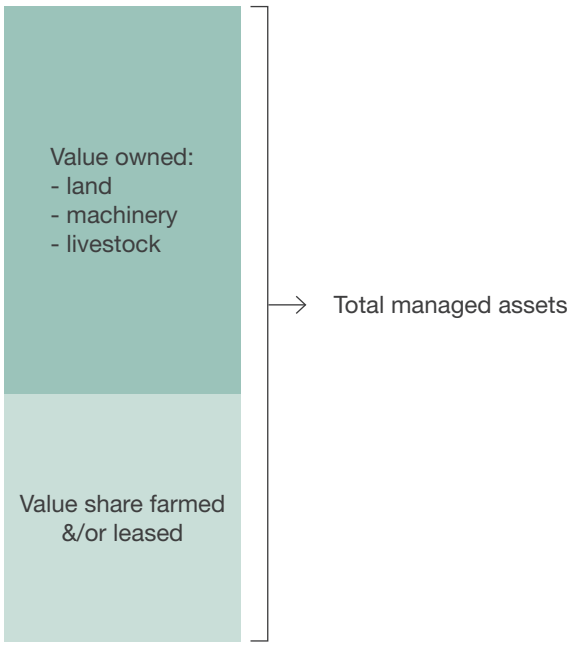
Source: P2PAgri P/L

Table 5.7: Specific calculations needed from 'Upndowns Farm' budgets

Profit and loss budget (Table 5.5, section **5.2.3, Module 2**)	1. Farm EBIT	$616,019
	2. Farm net profit (before tax)	$350,334
Balance sheet (Table 5.18, section **5.3.1, Module 2**)	3. Total assets managed	$13.9m
	4. Total assets owned	$11.1m
	5. Net worth	$8.2

Source: P2PAgri P/L

Figure 5.12: Total managed assets



Source: 'Agriculture in Australia', Bill Malcolm, et al, 2009

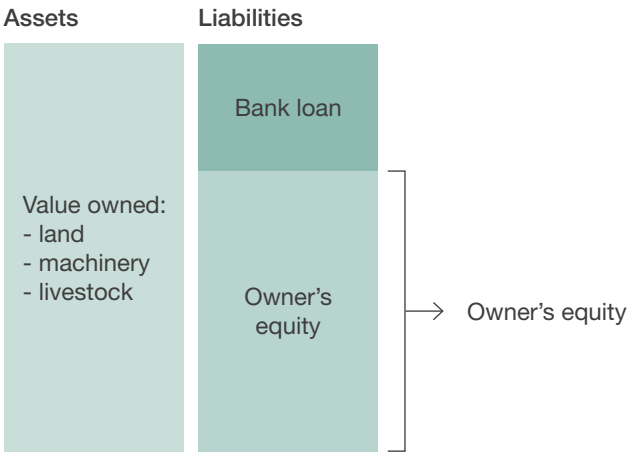
of room for improvement. The majority of dryland farm businesses in Australia are performing at a 1% – 3% ROMC. At this level, a business may be viable but not efficient. Figure 5.12 shows the various components of total managed assets.

2. **Return on owners' equity (ROE)** – This is the return on the owner's capital in the business. If we want to see if the business is earning more than bank interest for the owner, then this is the number for comparison. This number should be well above bank deposit rates, to reflect the reward from managing in a higher risk environment. This is calculated by Farm Net Profit (before tax) divided by Net Worth.

   ROE = FNP / Net worth

   Using **'Upndowns Farm'** data in Table 5.7, the calculation is $350k / $8.2m = 4.23%, which is above the current bank deposit rate of 4%. However, is the difference of 0.23% adequate compensation for the risks taken by the farm? Only the owner can answer this question. Figure 5.13 demonstrates owner's equity.

Figure 5.13: Owner's equity



Source: 'Agriculture in Australia', Bill Malcolm, et al, 2009

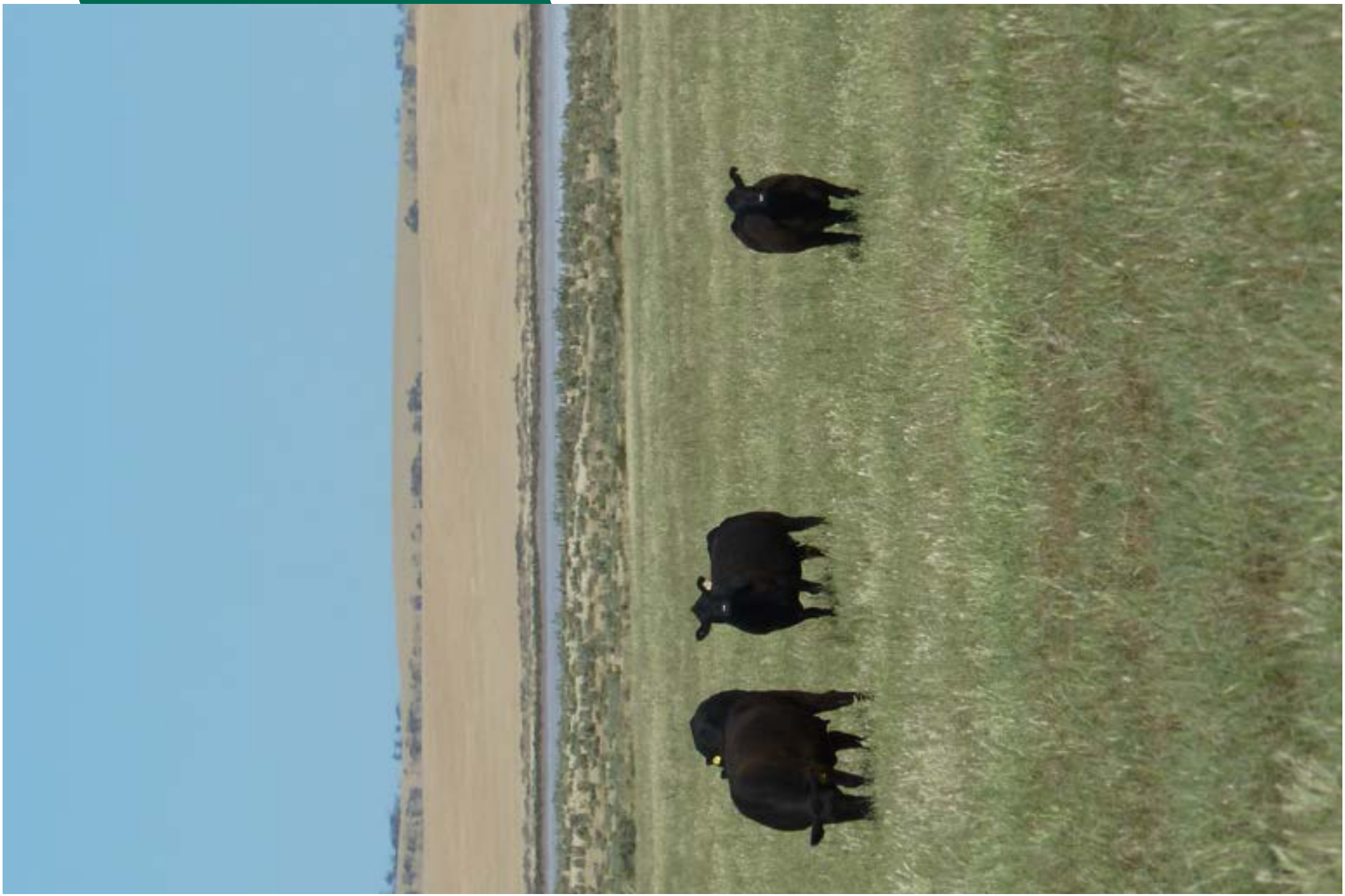
Capital gain of land

The efficiency measures above are an indication of the management performance of the business.

However, agricultural land in some parts of Australia has experienced a real (above inflation rate) capital appreciation over the last 20 years. In some regions, this rate has been measured up to 6% real compound growth. This rate of return should be added separately to the 'return on managed capital' as the owner's equity can also increase in this way. Using the example of **'Upndowns Farm'** with a return to total capital managed of 4.43% and a land growth of 6%, the combined efficiency measure would be 10.43%. This is well above 8%, so it shows an efficient return. However, the capital growth of land reflects the rural economic health rather than the manager's performance. It is recommend that you judge your business performance on 'return on managed capital' separately from land asset growth.

Action points

- Measure and record the business 'return on managed capital' every season. This will highlight trend in business efficiency.
- Keep a record of 'return to owner's equity', to ensure your business is performing better than bank deposit rates.
- Calculate these measures annually, at the end of each season once the results are known. This will highlight trends in business efficiency over time.
- When making business decisions, assess what effect the decision will have on business efficiency.



5.2.5 Enterprise gross margin budgets

Do you know the financial contribution of your farm enterprises?

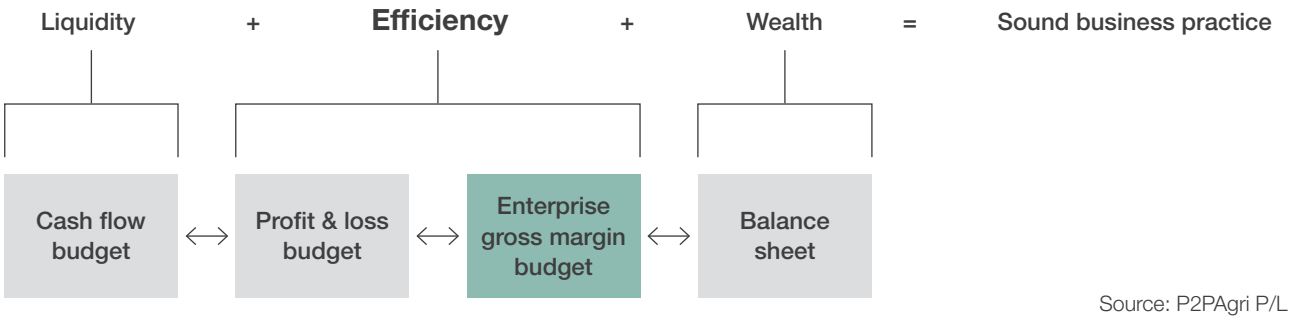
Many Australian farmers are involved in multiple enterprise farming systems, which means the contribution to cash and whole farm profit from each enterprise should be known. It is important to understand gross margin budgets and their role in farm financial analysis.

KEY POINTS

- Enterprise gross margin budgets indicate each enterprise's financial performance and contribution to the whole business performance.
- Enterprise gross margin budgets provide the basic 'financial building blocks' for the business.
- Enterprise gross margin budgets are useful when comparing the expected financial performance of different enterprises, rotations and different farming systems.
- Understanding the limitations of gross margin budgets helps when interpreting the results.

A co-contributor to this section is Chris Tuckwell, Rural Industry Developments.

Figure 5.14: Key management concepts: enterprise gross margin budgets



Source: P2PAgri P/L

What is an enterprise gross margin budget?

An enterprise gross margin budget is a simple budget that calculates the contribution from each enterprise to the business (refer to Figure 5.14). Enterprise gross margin is defined as the total income derived from an enterprise less the variable costs incurred in the production of that enterprise.

Gross margin = Gross income – variable costs

It is important to note that the enterprise gross margin indicates the contribution that enterprise makes towards covering the business overheads. The higher the enterprise gross margin, the more valuable that enterprise is to the business.

How are enterprise gross margins budgets used?

Enterprise gross margin budgets are useful for:

- **Comparing relative variable costs and returns** for similar alternate farm activities.
- **Comparing the historic performance of activities,** or to predict the performance of potential alternative activities.
- **Helping to plan** the whole farm enterprise mix and the expected contribution of different rotations to whole farm profit.
- **Developing a cash flow budget** is made easier if the estimated enterprise gross margins have been developed. Once the cropping and pasture plan is known, multiply the gross margins per hectare to calculate total fertiliser, chemical, seed cost etc.
- **Estimating the impact of changes** in expected yields, prices and variable costs, and hence the variability and risk associated with each enterprise.

How can gross margins be expressed?

Enterprise gross margins can be expressed as follows:

1. **The absolute contribution** made by the enterprise to the business, such as wheat having a gross margin of $157,081.
2. **The percentage relative contribution** the enterprise makes to the business. In this example, wheat is 13% of the total farm gross margin.
3. **Limiting resource:** gross margin budgets are most useful when they express the enterprise gross margin in terms of the most limiting resource. For example, if working capital is the most limiting resource, a gross margin expressed as % gross margin ($GM) per $ working capital may

Table 5.8: Options for measuring gross margins on 'Upndowns Farm'

Enterprise	1. Absolute contribution to total gross margin	2. Percentage Relative contribution	3. Limiting resource	
			3.1 Relative to area (Gross margin/ha)	3.2 Relative to DSE (Gross margin/DSE)
Wheat	$157,081	13%	$567	
Malt barley	$77,887	7%	$573	
Feed barley	$68,863	6%	$485	
Canola	$243,029	20%	$769	
Beans	$124,815	10%	$650	
Clover	$12,382	1%	$442	
Chickpeas	$19,835	2%	$331	
Prime lambs	$76,574	6%	$609	$44.52
Self-replacing merino	$405,310	34%	$768	$56.15
Cattle	$8,565	1%	$300	$21.96
Total	**$1,194,341**	**100%**		

Source: P2PAgri P/L

be appropriate. If labour is most limiting then $GM per labour unit would be informative. However, the two most commonly used measures are:

3.1 Relative to the area the enterprise uses when land is the most limiting resource. This is expressed as $GM per hectare, such as wheat $567/ha. Use this measure if you want to assess the performance of the enterprise in the business compared to other enterprises competing with wheat for land and which would play a similar role in the crop rotation. Most farmers tend to use this measure.

3.2 Relative to the feed supply expressed as 'dry sheep equivalents' (DSE's) used by the livestock enterprise, such as $44.52/DSE for prime lambs enterprise. Also, use this measure if you want to assess the efficiency of the enterprise in the business against other livestock enterprises competing for the same feed supply.

These options are shown for 'Upndowns Farm' in Table 5.8

What costs are not included in gross margin budgets?

Some costs cannot be easily attributed to particular activities because they are spread across all activities on the farm and cannot be readily apportioned between them. Some of these are fixed or overhead costs and are incurred irrespective of which enterprise mix is chosen, and include:

- Permanent labour
- Depreciation
- Accountancy fees
- Rates and taxes
- Interest payments
- General insurance
- Rent
- Family drawings

What is a DSE and how is it used?

When comparing livestock gross margins, it is useful to compare the gross margins on the most limiting resource, which is usually annual feed supply for livestock. In Australia, annual feed supply is usually measured in DSE (dry sheep equivalent).

All classes of livestock have a different feed requirement relating to their production, age, sex and size (e.g. a pregnant ewe needs more feed at certain times of the year than a wether that is the same weight and age). DSE ratings allow us to compare relative feed demand/grazing pressure of different groups of animals whether they are the same or different species.

There is much debate over DSE ratings and what is the base unit. Most commonly in Australia, it is described as the amount of feed energy required to maintain for one year a 45kg or a 50 kg live weight merino wether with a body condition score of 2. The basis of a DSE rating is the amount of metabolisable energy required for annual maintenance, measured in megajoules of metabolisable energy (MJ/ME/year). A DSE requires about 8 MJ/ME/day or about 3000 MJ/ME/year. DSE tables for different classes of livestock are commonly available.

1. How to calculate a crop gross margin

Steps to determine a crop enterprise gross margin budget are:

1. Calculate all annual production costs. The enterprise variable costs include all cash expenses (inputs) directly incurred in the production of the saleable enterprise output. Some typical costs that should be considered for crop enterprises are shown in Table 5.9.
2. Calculate the gross income of a particular crop enterprise. The gross income of a crop is determined by the yield and the price. For example, a wheat crop that yields 4.5t/ha and obtains a price of $200/t gives a wheat gross income of $900/ha. Crop income is counted regardless of whether the output is sold or stored, in which case it is valued at current market value.

   4.5t/ha x $200/t = $900/ha
3. Enterprise Gross Margin = Gross Income - Variable Costs.
4. Divide this by the number of hectares of crop planted to produce an enterprise gross margin/ha.

'Upndowns Farm' wheat gross margin

Table 5.10 gives a wheat gross margin from the sample farm. The farm gate price means freight and marketing costs have been taken off. As these costs are usually on a per tonne basis when calculating a gross margin, it is easier to deduct these costs per tonne from the price. The gross margin of $567.08/ha means that this is the amount per hectare of wheat that is available to cover overhead costs and contribute to farm profit.

'Recently, we've started inputting all our data into PAM (Paddock Action Management), which is just a computer program that keeps us up-to-date with all our stock numbers and gross margins. If we make sure we enter all our data, we can turn out our gross margin budgets on our different crops and on our sheep. We know how much area they're all running on so we try to grow the most profitable crops to reduce our costs if we can.'

Scott Nicholson,
'Bretton Estate', Campbells Bridge, Victoria

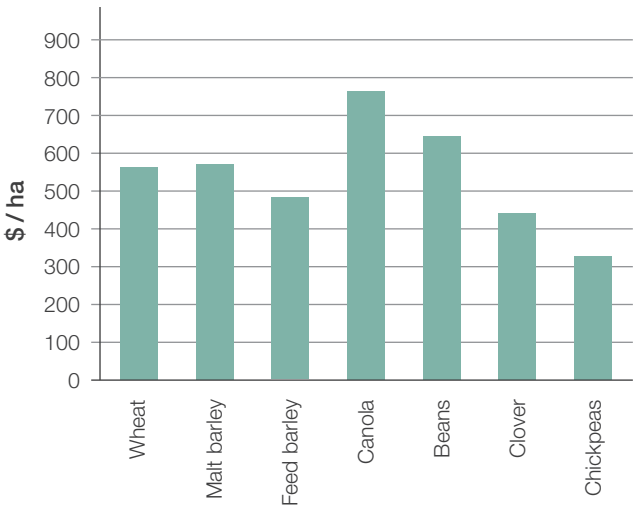
Figure 5.15 indicates the relative performance of different cropping enterprises on 'Upndowns Farm'. In this example, canola has the highest gross margin and chickpeas the lowest. It is important that these cropping gross margins are calculated for your business as results will vary between farms and between seasons. Your gross margin calculations should reflect the management levels, soil capability, rainfall expectation and pest and weed issues of your own farm.

Table 5.9: Crop enterprise variable costs

Land preparation • All machinery operations • Other procedures or requirements undertaken before a crop is planted
Pest, disease & weed control • All insecticide, fungicide and herbicide applications • Costs of spraying (ground or aerial) • Casual labour
Planting • Seed • Machinery running costs • Casual labour • Fertiliser
Irrigation • Water charges • Pumping and application costs • Electricity and maintenance costs • Licence fees
Harvest, storage and freight • Casual labour • Pest protection • Freight costs

Source: Rural Industry Developments

Figure 5.15: Estimated crop gross margins on 'Upndowns Farm'



Source: P2PAgri P/L

Table 5.10: 'Upndowns Farm' wheat gross margin budget

Crop: wheat _____		Total area: _____ ha			Year: _____				
Gross income (A):								$/ha	
Yield income		4.5	Tonnes/ha	x	200	$/tonne	=	900.00	(A)
Variable costs (B):									
Seed								$/ha	
Seed		60	kg/ha	x	0.20	$/kg	=	12.00	
Seed treatment		60	kg/ha	x	0.20	$/kg	=	12.00	
Levies									
GRDC levies			%	x		$ Gross	=		
EPR & State levies			tonnes sold	x		$/tonnes	=		
Fertiliser (bulk)									
18:20:00		120	kg/ha ÷1000	x	450	$/tonne	=	54.00	
Urea		90	kg/ha ÷1000	x	560	$/tonne	=	50.40	
Chemicals: herbicides									
Summer weed control		0 .5	litres/ha	x	5.00	$/litre	=	2.50	
Chemical 1			gm/ha	x		$/_____	=		
Pre-Emergents									
Chemical 2		1.5	litres/ha	x	8.00	$/litre	=	12.00	
Chemical 3		5	gm/ha	x	5	$/gm	=	25.00	
Post-Emergents									
Chemical 4		2	litres/ha	x	10	$/litre	=	20.00	
Chemical 5		10	gm/ha	x	7	$/gm	=	70.00	
Chemicals: fungicides									
			litres/ha	x		$/litre	=		
			gm/ha	x			=		
Freight									
Grain/t			tonnes	x		$/tonne	=		
Fertiliser/t			tonnes	x		$/tonne	=		
Operations	**Total cost**								
Fuel & oil	57,100	x	15	% crop area	÷	277	ha	=	30.92	
Repairs & maintenance	40,070	x	15	% crop area	÷	277	ha	=	21.70	
Contract work									
Aerial spraying								=		
Urea spreading								=		
Crop insurance								=	5.50	
Casual labour								=	5.60	
Harvesting			1		x	11.30		=	11.30	
						Variable costs/ha		=	332.92	(B)
Gross margin $/ ha (C):									
		900.00	(A)	-	332.92	(B)	=	567.08	$/ha (C)
Enterprise gross margin:									
		277	Total ha	x	567.08	$/ha (C)	=	$157,081	TOTAL $

Download a crop gross margin budget template from: **www.grdc.com.au/FBMtemplate-CropGrossMargin**

Source: P2PAgri P/L / Rural Industry Developments

2. How to calculate a livestock gross margin

Steps to determine a livestock gross margin budget are:

1. Calculate annual livestock reconciliation (below).
2. Calculate all annual variable costs. The enterprise variable costs include all cash expenses (inputs) directly incurred in the production of the saleable enterprise output. Typical costs that should be considered for livestock enterprises, but are not limited to, are shown in Table 5.11.
3. Calculate the gross income of a particular livestock enterprise e.g. livestock or wool sales.
4. Calculate the DSE requirements for the enterprise.
5. Enterprise Gross Margin = Gross Income - Variable Costs.

'Upndowns Farm' sheep gross margin

Table 5.12 gives a sample sheep gross margin for 'Upndowns Farm'. Income is earned from both wool and livestock sales and variable costs include pasture maintenance costs.

Livestock gross margins are best expressed as a gross margin per dry sheep equivalent (DSE) as feed availability is generally the most limiting resource for livestock in a farming business. In the example in Table 5.12, the $56.15/DSE can now be compared against other livestock enterprises. Figure 5.16 shows the comparison of self-replacing merino, prime lambs and cattle for 'Upndowns Farm'. These figures indicate that of all the livestock enterprises on this property, self-replacing merinos provide the greatest contribution to profits.

Livestock reconciliation

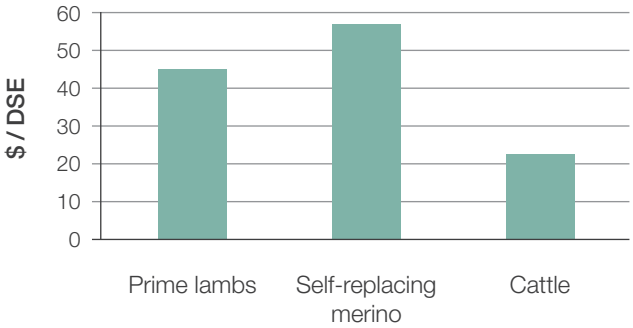
To accurately complete a livestock enterprise gross margin budget, a livestock reconciliation is needed to show the dynamics of the flock population through the year. Figure 5.17 illustrates the main seasonal events for the self-replacing merino flock in 'Upndowns Farm'. It shows when lambing, shearing and mating occurs. It also shows when wool and sheep are sold which helps to clarify the cash flow.

The aim of a livestock reconciliation is to measure the movement in livestock numbers through the year, which includes how many lambs are weaned and those that are not sold, how many rams are purchased, and how many animals die of natural causes. For a self-replacing merino enterprise, the start of the season occurs just before lambing, as any lambs kept over from the previous lambing will have turned into hoggets, so the season starts with no lambs. Table 5.13 shows the livestock reconciliation for the self-replacing merino flock of 'Upndowns Farm'.

This flock is known as a 'steady state' flock where the opening numbers of 4,065 are the same as the closing numbers. From this table, you can see what animals are being sold and purchased, what animals are in the different age groups and the number of animals that die. At the end of the year, it also shows what animals move up to the next age group (see transfer rows).

Importantly in a livestock gross margin, if an abnormally high number of sheep are retained due to the sheep numbers being increased, or larger than normal numbers are sold because

Figure 5.16: Estimated livestock gross margins for 'Upndowns Farm'



Source: P2PAgri P/L

Table 5.11: Livestock enterprise variable costs

Supplementary feed • Feed storage costs • Cost of feed (hay and/or grain)	**Animal husbandry costs** • Ear tags • Shearing costs • Casual labour
Animal health requirements • Drenches/dips/vaccines • Trace elements • Casual labour	**Pasture irrigation** • Water charges • Pumping and application costs • Electricity and maintenance costs • Licence fees
Fertiliser • Pasture fertiliser • Spreader or sprayer use	**Repairs and maintenance** • Percentage allocated to livestock enterprises
Livestock sale and purchases • Freight • Selling costs • Animal replacements	**Shearing and crutching** • Shearing costs • Crutching costs

Source: Rural Industry Developments

Table 5.12: 'Upndowns Farm' sheep gross margin budget

Enterprise type: Self-replacing merino	Total DSE: 7,218		Year: _____					
Gross income (A):							$	
Wool	31,862	kg	x avg. price	649	c/kg	=	206,783	
Lamb sales	2,460	hd	x avg. price	90.00	$/hd	=	221,400	
Cull livestock sales	1,023	hd	x avg. price	96.30	$/hd	=	98,520	
					TOTAL		**526,703**	**(A)**
Variable costs (B):								
Shearing							$	
Shearing sheep	7,604	hd	x	6.00	$/hd	=	45,624	
Shearing rams	45	hd	x	12.00	$/hd	=	540	
Wool packs	172	packs	x	10	$/pack	=	1,720	
Shed sundries		sheep	x		$/hd	=		
Shed labour		days	x		$/day	=		
Wool classer		days	x		$/day	=		
Wool marketing		%	x		$ gross	=		
Wool levy		%	x		$ gross	=		
Health	7,665	sheep	x	1.06	$/hd	=	8,112	
Crutching	6,525	sheep	x	1.60	$/100	=	10,440	
Lamb marking	3.600	lambs	x	0.30	$/hd	=	1,080	
Mulesing		lambs	x		$/hd	=		
Vet costs								
Livestock purchases	10	hd	x	2,000	$/hd	=	20,000	
Freight								
Livestock		hd	x		$/hd	=		
Wool		bales	x		$/bale	=		
Stock selling charges								
Commission		%	x		$ gross	=		
Yard fees		hd	x		$/hd	=		
Hand feeding								
Hay		tonne	x		$/tonne	=		
Grain		tonne	x		$/tonne	=		
Insurance								
Water						=		
Annual pasture						=		
Improvement						=	33,877	
Other						=		
					TOTAL variable costs	=	**$121,393**	**(B)**
Enterprise gross margin (C):								
	$526,703	**(A)**	**-**	**$121,393**	**(B)**	**=**	**$405,310**	**(C)**
Gross margin / DSE:								
	$405,310	**(C)**	**÷**	**7,218**	**Total DSE**	**=**	**56.15**	**$/DSE**

Download a livestock gross margin budget template from: **www.grdc.com.au/FBMtemplate-LivestockGrossMargin**

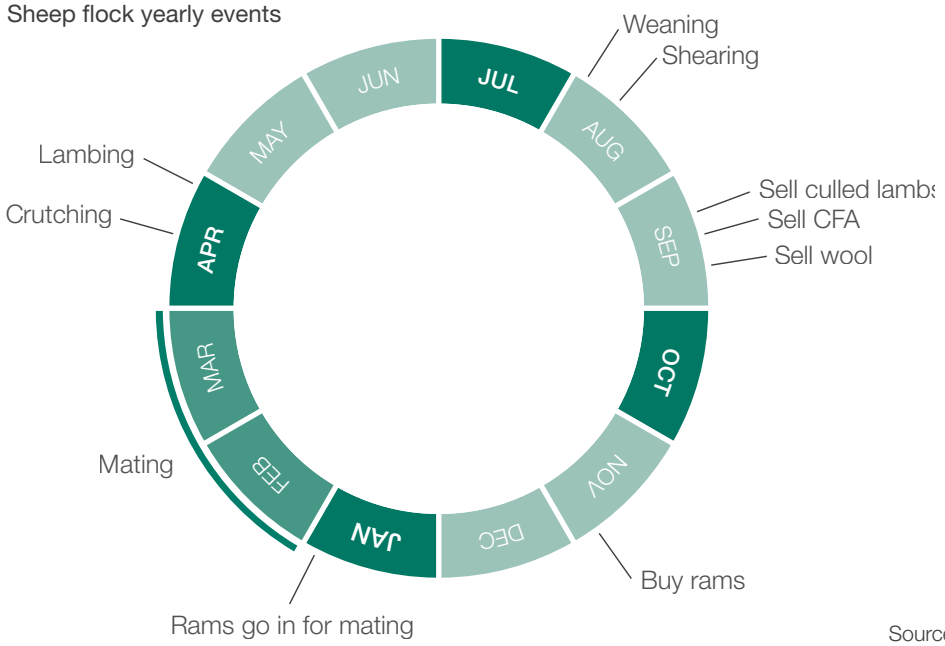
Source: P2PAgri P/L / Rural Industry Developments

Table 5.13: A self-replacing merino livestock reconciliation

Livestock age groups	No. at start	Weaned	Purchases	Sales	Deaths	Trans out	Trans in	No. at end
Ewes	2,880			599	87		686	2,880
Ewe hoggets	1,140			420	34	686	1,140	1,140
Ewe lambs		1,800		660		1,140		
Wethers								
Wether hoggets								
Wether lambs		1,800		1,800				
Rams	45		10	4	6			45
Total	**4,065**	**3,600**	**10**	**3,483**	**127**	**1,826**	**1,826**	**4,065**

Source: P2PAgri P/L

Figures 5.17: Sheep flock yearly events



Source: P2PAgri P/L

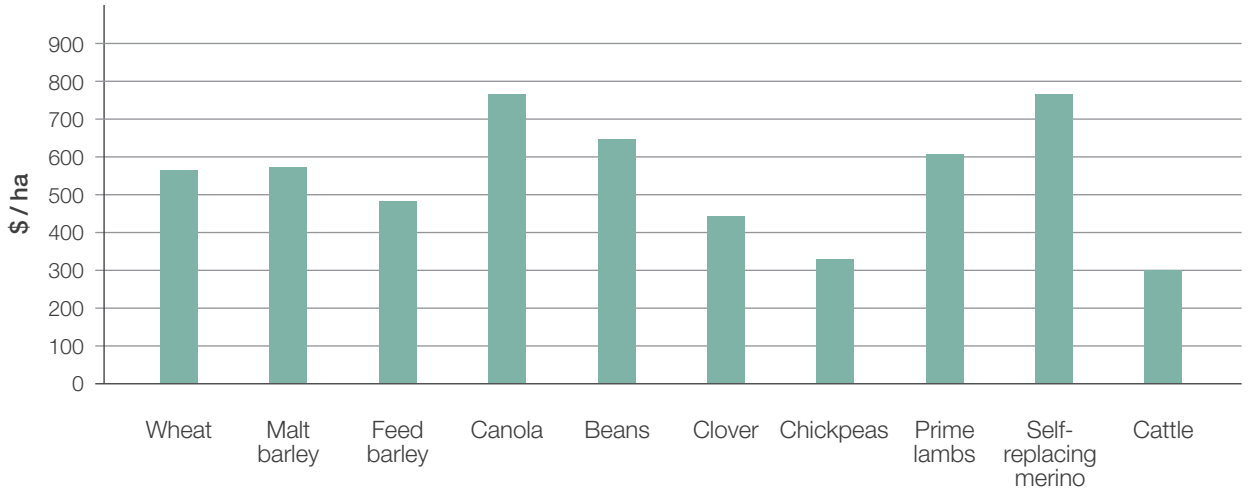
the flock numbers are being decreased, then this allowance needs to be recorded in the livestock gross margin. The increased numbers, over and above the numbers normally expected to be sold, would be deemed as capital sales. While they will be included in cash flow, they are actually assets being sold and should be recorded in the balance sheet and not as income in the livestock gross margin. Likewise, where a high number of sheep are retained, they are classed as assets to the business and should not be included in the gross margin. By doing this, a correct gross margin measure can be made and relative profit performances between seasons and other livestock enterprises can be compared accurately (Malcolm et.al, 2005).

Comparing cropping and livestock gross margins

The contribution one activity makes to another activity is difficult to quantify; for example, the clover pasture phase of a crop rotation contributes feed to the current livestock activity and also provides nitrogen to the next crop. This is why enterprise gross margins make the most sense when seen as combinations of activities that, together, produce farm total gross margin. Care needs to be taken when comparing annual cropping and livestock gross margins, as at different times during the season they can be either competitive or complementary. For example, at seeding time, these enterprises are competitive for both land and labour, but after harvest may be complementary as stubbles can be used for livestock feed.

Figure 5.18 compares 'Upndowns Farm' enterprises by gross margin per hectare. This example shows that the relative contribution of the self-replacing merino enterprise to total gross margin and ultimately to farm profit, is equal to the best of the crop enterprises. If we focus on the cropping period of the year to decide on enterprise mix, then a gross margin is useful. However, other strategies of supplementary feeding or livestock agistment during this period could change the size of the livestock enterprises and take advantage of surplus available feed at other times of the year.

Figure 5.18: Enterprise gross margin comparison for 'Upndowns Farm'



Source: P2PAgri P/L

Table 5.14: Canola gross margin sensitivity for 'Upndowns Farm'

	Original estimate	Price increase x 5%	Yield increase x 5%	Variable cost increase x 5%
Price ($/t)	$520	$546	$520	$520
Yield (t/ha)	2.2	2.2	2.31	2.2
Variable cost ($/ha)	$375	$375	$375	$394
Gross margin ($/ha)	$769	$826	$826	$750
Change from the original ($/ha)		$57	$57	-$19

Source: P2PAgri P/L

Rotation analysis with enterprise gross margins

Rotation selection can have a large impact on the farm's business performance. The use of enterprise gross margins is a good way to measure the relative financial performance of rotations. Using the enterprise gross margin example above, two rotations of the one paddock can be compared. The calculations below illustrate the comparison using gross margins (NB. these figures come from Table 5.8).

Rotation 1: Wheat / Canola / Malt Barley / Beans

$567/ha + $769/ha + $573/ha + $650/ha = $2,559 ÷ 4

= average $639.75/ha

Rotation 2: Wheat / Canola / Cattle / Cattle

$567/ha + $779/ha + $300/ha + $300/ha = $1,946 ÷ 4

= average $486.50/ha

In this example, the continuous cropping rotation provided a 31% increase in the rotational gross margin. This analysis was based on average seasonal expectations. To gain an understanding of the risk differences, this analysis could be undertaken assuming different seasonal outcomes were experienced.

While the individual gross margin/ha provides useful information, sometimes cropping sequence analysis is more useful as an individual crop cannot be grown continuously. For example, consider a wheat gross margin of $500/ha which is the result when grown on a fallow-wheat-fallow-wheat sequence. However, in a fallow year, the gross margin is $0/ha, which means that this rotation gross margin is $500 ÷ 2 = $250/ha. In farm planning, it is useful to look at an area of the farm over time and estimate the crop sequence GM/ha for that area of land.

Sensitivity tables

It is also useful to produce several gross margin budgets for an enterprise using different assumptions of yield, price, and cost scenarios.

Based on assumptions used, sensitivity tables can be used to test the impact of a good or bad year by comparing the impact of different yields and prices on overall gross

margins received from growing a particular crop. They allow comparison of 'average', 'best case', and 'worst case' outcomes for an enterprise so risks associated with that enterprise can be assessed.

Another use is to compare the impact of a change in yield, price and variable costs. This sensitivity analysis demonstrates where management could be focused in order to achieve higher gross margins. For example, the canola enterprise on 'Upndowns Farm' has the following:

Yield @ 2.2t/ha
Price @ $520/t
Variable Costs @ $375/ha

Therefore, this Canola Gross Margin = ($520/t x 2.2t/ha) - $375/ha = $769/ha

Table 5.14 illustrates the sensitivity of this Canola Gross Margin to a 5% change in each part of the equation.

Interestingly, yield and price have the greatest effect on the enterprise gross margin, both having a $57/ha increase with a 5% change in value. This example indicates that while costs are important, profitability is more sensitive to improved management of yield and price. Note that while this type of analysis is powerful, the adjustments of variable costs are also related to yield performance and sometimes grain quality, so it can be difficult to separate the effect of variable costs from yield and price.

Assumptions and probabilities

Like all budgeting techniques, enterprise gross margin budgets are built on assumptions when used for planning. It is important to understand the assumptions behind the calculations to correctly interpret a crop gross margin budget.

It is difficult to account for every possible potential cost item, even if it has a low probability of occurring.

Assumptions used in gross margin budgets must be realistic. If there is doubt about a cost or event that may influence an outcome, create an additional budget to see what impact a change to a particular cost will have on the enterprise gross margin.

For example, fungal infection of cereal crops may be a problem but not in every year. If fungal spraying is included in the gross margin budget, the budgeted outcome will be conservative as a cost is included for an event that is unlikely to occur every year. To account for such a scenario, allow for an appropriate proportion of spraying costs (e.g. 33%) to demonstrate the need to spray every third year.

Limitations of gross margin budgets

Annual enterprise gross margin budgets have limitations and should not be the sole analysis tool to determine farm enterprise mix, as they:

- Exclude overhead costs, so they do not supply enough information if a cost of production is required.
- Do not take into account the complementary effect of the farm enterprise mix and the need for rotations to control disease, weed and pest risks.
- Take no account of factors relating to risk management, such as market prices, crop failure and input cost volatility unless a sensitivity assessment is made.
- Do not allocate permanent labour costs to enterprises.
- Do not specifically take into account dual enterprise benefits e.g. stubble grazing value of crops.
- Do not take into account future benefits and interactions, as they are a single season analysis.
- Can be used for sensitivity analysis when the gross margin is calculated for different prices and costs. However, care needs to be taken when using this information. A positive gross margin does not guarantee it is profitable as a gross margin budget does not take into account overheads and finance costs.

Action points

- Calculate the annual enterprise gross margin budget for each of your farm enterprises last year and observe which provided the greatest contribution to the business' profits.
- Estimate the enterprise gross margin budgets for this year's expectations.
- Given this information, what would be the most likely profitable enterprise mix in your business?
- Which enterprise has the greatest variable income and risk?
- Download gross margin template for livestock at: **www.grdc.com.au/FBMtemplate-LivestockGrossMargin**
- Download gross margin templates for cropping at: **www.grdc.com.au/FBMtemplate-CropGrossMargin**

5.2.6 Cost of production

To be successful, a farm business needs to sell its production for more than it costs to produce. Knowing this information at the point of sale is useful, but estimating the various costs of producing a product is not straightforward.

KEY POINTS

- Understanding the costs involved in production, and the role different costs play, is critically important to managing and maintaining profitability.
- The challenge in calculating costs of production is the allocation of overhead costs and, before harvest, estimating production levels.
- Cost of production data can be used to drive selling decisions, improve profitability and reduce business risk.
- Focusing on strategies to reduce cost of production can improve your long-term financial sustainability.

Co-contributor to this section: Tony Hudson, Hudson Facilitation.

The nature of grain production is that there are more producers than purchasers of grain, making most producers price takers. So it is logical to want to measure business efficiency by assessing the cost of production (COP) for each commodity you produce. The most sustainable business models are those that are able to produce with the lowest cost of production. Minimising your cost of production is an important business management strategy.

What is cost of production?

Cost of Production (COP) is the total cost to produce a unit of that commodity, including both variable and overhead costs attributable to that enterprise. It is useful that a commodity is expressed in the same term for which the farmer is paid: $/t for cereal, grain legume or oilseed, $/hd or $/kg for beef or lamb, c/litre for milk etc.

The major components for calculating COP include:

- **Size of production** – area multiplied by productivity
- All **variable costs** to produce a unit of commodity
- An allocation of **overhead costs** to produce a unit of a specific commodity.

> **'In 2010, we worked out that if we were on our own, our cost of wheat production would have been $204/t, but now in 'Bulla Burra' (collaborative farm) we achieved $171/t - a huge significant difference in efficiency.'**
>
> John Gladigau,
> 'Bulla Burra', Allawoona, SA

Debate over the use of COP

There has been significant debate in farm business management academic literature about the benefits of knowing your cost of production. The argument is not that this information is not important; what is central to this argument is that there are different costs relevant to different decisions, making cost of production measures difficult to calculate accurately. Concern with using cost of production measures are based on the following arguments:

- The cost of production of a commodity cannot be measured without overhead costs being attributed to that particular enterprise. However, there is no scientific or objective method available to do this, so any subjective method could lead to incorrect conclusions.
- One of the most volatile numbers to predict in a farm business is production. That is, the final volume of grain production is not known until harvest is completed. Yet a cost of production cannot be measured until total production is known. If we are unable to confidently estimate the final production figures, then how can we estimate the cost of production for that enterprise prior to harvest when making grain selling decisions?

These are powerful arguments as to why the cost of production should not be calculated in advance of harvest. However, with the advantage of computer modelling and scenario analysis, ranges of possible costs of production can be estimated across a range of season types, and using various 'approximations' for allocating overhead costs. Knowing this range of information provides some direction to management when making selling decisions. Information of this nature, if modelled consistently and interpreted carefully, is better than none!

However, you be the judge and determine if and in what situations assessing cost of production is useful when making business decisions, such as deciding what sale price to lock in. At the very least, cost of production should be assessed at the end of each season so it can be monitored for business performance.

The challenges discussed above can be carefully managed by considering the following:

1. **Allocating overhead costs to specific enterprises** - There is no correct way to allocate overhead costs between the farm business enterprises. By definition, annual variable costs are the only costs that can be directly allocated to the annual production of a commodity. Annual overhead costs, such as accountant fees, rates and taxes, are difficult to allocate to specific parts of the farm business. However, to calculate a cost of production, overhead and finance costs also need to be allocated to the production of a commodity. A discussion on the options available for allocating overhead costs is given below. If you want to calculate your cost of production, the challenge is to select carefully which option you chose for allocating overheads and be consistent with this method across enterprises and whenever you undertake this calculation.
2. **Having a clear understanding of your production levels** – If a cost of production has been undertaken in a previous season, you know the production levels that have been achieved and so the calculation can be made with some certainty. However, if you are undertaking this analysis for the coming season, then you can only estimate the production levels. The challenge is that production levels are very sensitive to seasonal outcomes and so you could assess the range of costs of production given different seasonal expectations (poor, average and good).
3. **Cost of production does not allow for profits** – Cost of production generally does not have an allowance for profit. If the product is sold for the same price as it cost to produce, then the business is standing still. If you calculate your cost of production, it is important to also make a decision about the profit margin your business is aiming for.

How does knowing my COP help my farm business?

Knowing the COP for a commodity will help you to:

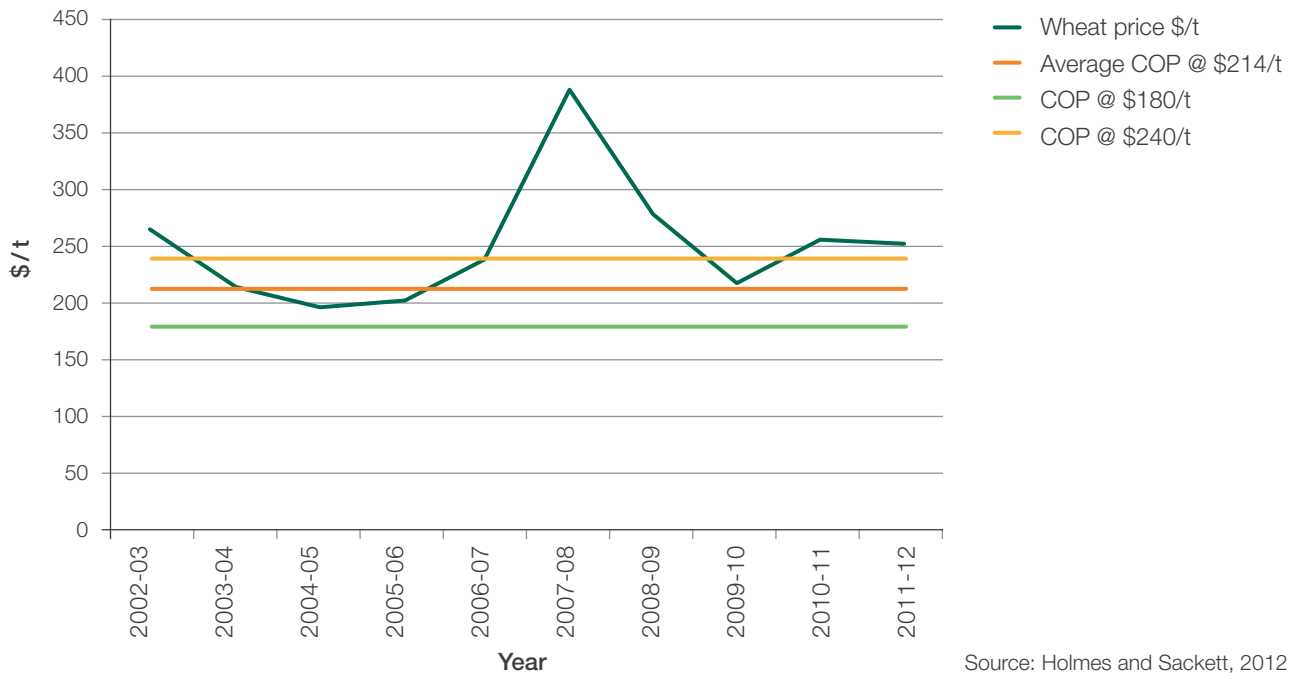
- Identify enterprises which consistently have a commodity price higher than your COP and so are consistently profitable.
- Identify enterprises with a commodity price which is consistently below COP and investigate cost savings, or changes to your enterprise mix.
- Use commodity price projections to enhance profitability in the medium term.
- Select a consistently profitable enterprise mix.
- Gain clarity around marketing decisions. It is easier to sell grain when you know the prices needed in order to generate profit.
- Decrease business risk.

For example, Figure 5.19 illustrates the average cost of production for the average of wheat growers in Australia for the last decade. This is the middle, bright **orange line** at $214/t. At this cost, for the average grower, wheat is break-even or profitable in 8 of the 10 years and significantly more profitable (more than $40/t over COP) in 4 of those years. However, if your COP is around the **yellow line** at $240/t, there are only 5 years in 10 when growing wheat has made you any profit, it has lost you money in several years, and on average over the decade, your profit has only been $12/t. Issues such as expansion, debt reduction and improving quality of life are a struggle at this COP, and you might be asking yourself:

1. How can I grow wheat more cheaply? or,
2. Are my odds of success better if I grow something else?

If, however, you are producing wheat on average at $180/t (the **light green line**), you are making profit every year and averaging $72/t profit over the period. It still requires comparison with alternative enterprises, but wheat is profitable for you most of the time.

Figure 5.19: Wheat price compared to COP



Source: Holmes and Sackett, 2012

Once you know how much it costs you to produce a unit of a commodity, you can analyse the likelihood of generating profit from your business, calculate break-even points and assess the risks in your enterprise mix.

Figures 5.20 – 5.23 below plot annual commodity prices from 2002-2012 for barley, wheat, canola and wool against the average COP for those commodities for an average farm over the years 1998-2010.

Given the average COP for an average farm over the decade, the results are clear. On average, growing wheat was more profitable than canola or barley, and growing wool was profitable each year for an average producer.

- How could you use this data to vary your enterprise mix towards greater profitability?
- Do you need to consider how to manage the riskier crops, especially in tight seasons?

It is worth interpreting this data. Analysis of the above data includes significant periods of drought where crop yields were low or zero. Under these conditions, barley is often the 'go to' crop, as it is seen by many as a lower risk, easier to grow and more tolerant of a dry spring than wheat or canola. The argument could be made, therefore, that the figures are giving barley a 'bad rap', due to it being the crop of choice when 'rolling the dice' in a tight season. Wool has the benefit of complementary lamb production and stubble grazing included in the figures and 'wipe out' yields are highly unlikely from sheep. You may ask how the sheep numbers would stack up if they didn't get the benefit of grazing failed cereal crops year after year!

Cost of production calculations are unique to each farming business and while the results in Figures 5.19 – 5.23 show industry trends, this would be very powerful business information if it were known for your particular farm. The use of trend data from a business is an essential tool to (1) demonstrate business performance to banks and (2) provide a 'big picture' view of the business performance, especially when a poor season is being experienced. In a poor season, it is important not to lose sight of the long-term trends, which will assist in managing the physical effects that a poor season brings.

Lhot: **'We're a good team together. I've got a Bachelor's Degree in Administration. I'll let him know what's going on, so he understands the whole operation, not only on the farm but also the financial aspect of the business. At the beginning of the year when we do our crop rotation with our agronomist, we sit down, we analyse the business and we work out our target. It is very important to know how much it costs us to grow the crop and how much we need in a year to operate the farm'.**

Steve: **'She tells me if I want to buy a new tractor, I've got to grow this (amount). Makes me pull my finger out!'**

Steve and Lhot Martin,
'Comfomabov' Minlaton, SA

How do you allocate overhead costs to an enterprise?

How you interpret the data is up to you. The important point is that you understand the need to calculate ***your*** Cost of Production and use it to help analyse input expenditure and guide production and marketing decisions in ***your business***.

There are three arbitrary ways to allocate overhead costs: on the basis of **land**, whole farm **gross revenue** or whole farm **gross margin**. Each option allocates costs based on a percentage of use or contribution:

Option 1: Percentage of Land Area - Calculates the % of the total usable hectares devoted to each enterprise, and apportions that percentage of total overhead costs to each enterprise.

Option 2: Percentage of Gross Revenue - Calculates the percentage of total gross revenue from each enterprise, and apportions overhead costs on the same percentage basis.

Option 3: Percentage of Whole Farm Gross Margin - As for (2) above, but allocates overheads on the percentage contribution of the enterprise to the Whole Farm Gross Margin.

'Upndowns Farm' COP options:

Each of the three calculation options are presented in Table 5.15 to illustrate the alternative overhead cost allocations and the effect that this has on the estimated cost of production for each commodity.

Which option should you use?

Option 1 (% Land Area) is probably the simplest and is appropriate if you have a single enterprise or a purely cropping business with predominantly one land class over most of the farm. However, for more complex businesses, which could include intensive enterprises such as chicken or pork production or those with varying land classes, options 2 or 3 above will to be more accurate.

For the example in Table 5.15, imagine most arable land (say 1,800ha) was cropped most years and the sheep grazed cropping paddocks in fallow and scrubby and rocky country, accounting for the other 1,700ha. To apportion overhead costs on a percentage of land area would unfairly bias against the sheep enterprise as the land they graze is generally less productive.

Options 2 and 3 tend to be more accurate. Option 3 can unfairly weight overheads toward the enterprise with the highest gross margin, which may not in fact be fair either. Using the figures in Table 5.15, overhead costs can be allocated proportionately according to total gross margin. The following formula can be used for this calculation:

$/t = (overhead cost x % whole farm gross margin) ÷ total tonnes

Using this formula, the overhead costs allocated to wheat and barley would be:

Wheat = ($350,000 x 27%) ÷ 1600t = $59/t

Barley = ($350,000 x 15%) ÷ 1600t = $33/t.

This option clearly apportions more overhead costs to wheat. In reality, this may be an unreasonable allocation.

Option 2 is recommended when calculating past COP for a commodity and estimating future COP. Overhead costs are unlikely to change greatly from year to year, although crop yield will. Chances are that if your wheat yield is down, so are the other crop yields, but their contribution as a percentage of gross revenue will likely be similar.

Allocating overhead costs: For a quick analysis Option 1 is fine, but for greater accuracy, use Option 2: Percentage of Gross Revenue. The important point is to be consistent with the option used for allocating overheads across years so actual COP results can be compared.

Figure 5.20: Decade canola price versus average COP

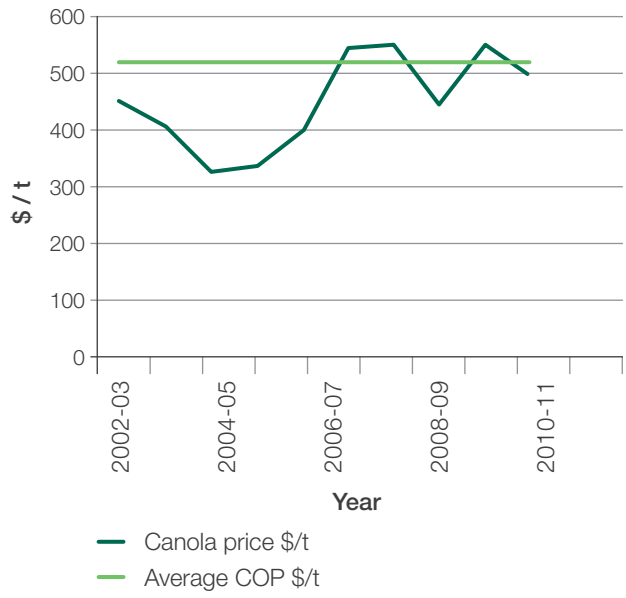
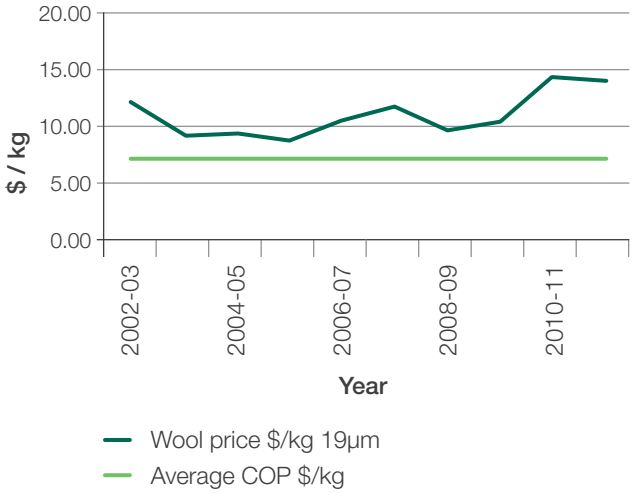


Figure 5.21: Decade barley price versus average COP

Figure 5.22: Decade wheat price versus average COP

Figure 5.23: Decade wool price versus average COP



Source: Holmes and Sackett, 2012

How do you calculate your cost of production (COP)?

Calculating your expected cost of production (COP) is best done at the beginning of each season, when your cropping and enterprise plan for the year has been finalised. At this stage, it is also worth completing your estimated annual profit and loss and gross margin budgets, as these will inform your likely COP estimations. Although they can be complex to complete, following the steps shown below should help minimise difficulties. While these cost of production calculations are usually done annually, they can also be reassessed throughout the year as the season unfolds and you have a better understanding of your yields.

To highlight the differences in COP calculations between enterprises, templates are provided for the following sample enterprises:

1. Cropping (Table 5.16)
2. Prime lambs (Table 5.17)
3. Self-replacing merinos (Table 5.18)

Each table includes the sample enterprise from 'Upndowns Farm' as a guide to the correct calculation. Categories in all three templates have been given a letter to help illustrate the formulae used when calculating the different options.

Table 5.15: Options for calculating cost of production for a medium rainfall mixed farm

Enterprise	Wheat	Barley	Canola	Prime Lambs	SR Merino
Enterprise area	500ha	500ha	500ha	1,000ha	1,000ha
Yield	3.2t/ha	3.2t/ha	1.4t/ha	18 hd/ha	16.9kg
Total production	1,600t	1,600t	700t	1,800hd	16,898kg
Total income from wool ($)				$75,367	
Total income from livestock sales ($)					$80,250
Commodity price	$220/t	$180/t	$420/t	$90/hd	$5.56/kg
Variable costs	$150,000	$172,500	$195,000	$77,810	$22,306
Overhead costs	$350,000	$350,000	$350,000	$350,000	$350,000
Option 1: COP based on % land use					
Enterprise % of farm area	14%	14%	14%	29%	29%
Variable costs	$150,000	$172,500	$195,000	$77,810	$22,306
Overhead costs	$350,000	$350,000	$350,000	$350,000	$350,000
Less wool income				$75,367	
Less livestock sales income					$80,250
Other sheep sales income				$22,750	
Cost of production:	**$124.38 /t**	**$138.44 /t**	**$348.57 /t**	**$45.11 /hd**	**$2.58 /kg**
Option 2: COP based on % gross revenue					
Enterprise revenue	$352,000	$288,000	$294,000	$260,117	$93,878
Enterprise % of gross revenue	27%	22%	23%	20%	7%
Variable costs	$150,000	$172,500	$195,000	$77,810	$22,306
Overhead costs	$350,000	$350,000	$350,000	$350,000	$350,000
Less wool income ($)				$75,367	
Less livestock sales income					$80,250
Other sheep sales income ($)				$22,750	
Cost of production	**$152.81 /t**	**$155.94 /t**	**$393.57 /t**	**$27.61 /hd**	**-$1.98 /kg**
Option 3: COP based on % gross margin					
Enterprise gross margin	$202,000	$115,500	$99,000	$182,307	$151,822
Enterprise % of whole farm gross margin	27%	15%	13%	24%	20%
Variable costs	$150,000	$172,500	$195,000	$77,810	$22,306
Overhead costs	$350,000	$350,000	$350,000	$350,000	$350,000
Less wool income ($)				$75,367	
Less livestock sales income					$80,250
Other sheep sales income ($)				$22,750	
Cost of production	**$152.81 /t**	**$140.63 /t**	**$343.57 /t**	**$35.39 /t**	**$0.71 /kg**

Source: P2PAgri P/L / Hudson Facilitation

Discussion on each enterprise is also based on the sample farm 'Upndowns Farm'. Note: all machinery depreciation, living expenses (managerial allowance) have been included in the overhead cost figure of $350,000.

Remember to select how you wish to allocate the business overhead costs between the enterprises: % of land used by each enterprise; % of the gross revenue earned by each enterprise; or, % of the total gross margin earned by each enterprise. Refer to the earlier section as to which method to select, but pick one and use it each time you do these calculations.

You can do these calculations either by calculating per unit of production, such as t/ha (ie 3.5t/ha) or by using absolute numbers, such as total tonnes (i.e. 1,600t). The absolute method has been used in these examples as it is often easier to calculate.

(a) Cropping COP

Table 5.16 provides a template for three cropping enterprises and a wheat enterprise from 'Upndowns Farm' to illustrate the COP calculations. If you have more than three crops, just add the appropriate columns.

The calculations of each option for allocating overheads are:

1. **COP based on % Land Use:**

   h = ((g x f) + e) ÷ c
   = ((14% x $350,000) + $150,000) ÷ 1,600t
   = $199,000 ÷ 1,600t
   = $124.38/t

2. **COP based on % Gross Revenue:**

   k = ((j x f) + e) ÷ c
   = ((27% x $350,000) + $150,000) ÷ 1,600t
   = $244,500 ÷ 1,600t
   = $152.80/t

3. **COP based on % Total Gross Margin**

   n = ((m x f) + e) ÷ c
   = ((27% x $350,000) + $150,000) ÷ 1,600t
   = $244,500 ÷ 1,600t
   = $152.81/t

Table 5.16: Template for cropping COP calculations

Enterprise: wheat	Example			
a. Enterprise area	500ha			
b. Yield	3.2t/ha			
c. Total production	1,600t			
d. Commodity price	$220/t			
e. Variable costs	$150,000			
f. Overhead costs	$350,000			
Option 1: COP based on % land use				
g. Enterprise % of farm area	14%			
e. Variable costs	$150,000			
f. Overhead costs	$350,000			
h. Cost of production = ((g×f)+e)÷c	**$124.38/t**			
Option 2: COP based on % gross revenue				
i. Enterprise revenue	$352,000			
j. Enterprise % of gross revenue	27%			
e. Variable costs	$150,000			
f. Overhead costs	$350,000			
k. Cost of production = ((j×f)+e)÷c	**$152.81/t**			
Option 3: COP based on % gross margin				
l. Enterprise gross margin	$202,000			
m. Enterprise % of whole farm gross margin	27%			
e. Variable costs	$150,000			
f. Overhead costs	$350,000			
n. Cost of production = ((m×f)+e)÷c	**$152.81/t**			

A template to complete your cropping COP can be downloaded at:
www.grdc.com.au/FBMtemplate-CroppingCostProduction

Source: P2PAgri P/L / Hudson Facilitation

(b) Prime lambs COP

The added challenge in calculating a livestock COP is that income can come from more than one commodity within the enterprise. For example, in a prime lamb flock, income comes from both sheep and wool sales. This means there are two commodities which can be used to calculate COP and if you allow them both to be variable, the answers are a combination of two numbers, which makes interpretation very difficult.

This is even more complex if you are trying to separate prime lamb sales from 'cast for age' (CFA) sheep sales. To simplify this COP calculation, it is recommended that the commodity with the lower expected income be removed from the allocated costs. This means the major commodity, or prime profit driver, can be more easily calculated and interpreted. In this case, the sale of prime lambs is the major commodity.

Table 5.17 provides a template for a prime lamb enterprise and a sample enterprise from 'Upndowns Farm' to illustrate the COP calculations.

The COP calculations below show prime lambs as $/hd, but you could also do this calculation for $/kg by using either the average live or dressed weight. This example uses the absolute numbers from the example farm's estimates. The calculations of each option for allocating overheads are:

1. **COP based on % Land Use:**

   j = (((h x g) + f) - d - i) ÷ c

   = (((29% x $350,000) + $77,810)-$75,367-$22,750) ÷ 1,800hd

   = $81,193 ÷ 1,800hd

   = $45.11/hd

2. **COP based on % Gross Revenue:**

   m = (((l x g) + f) - d - i) ÷ c

   = (((20% x $350,000) + $77,810)-$75,367-$22,750) ÷ 1,800hd

   = $49,693 ÷ 1,800hd

   = $27.61/hd

3. **COP based on % Total Gross Margin:**

   p = (((o x g) + f) - d - i) ÷ c

   = (((24% x $350,000) + $77,810)-$75,367-$22,750) ÷ 1,800hd

   = $63,693 ÷ 1,800hd

   = $35.39/hd

(c) Self-replacing merinos COP

The self-replacing merino flock also has income from various commodities - wool and CFA sheep sales. In this case, the major commodity is wool, so the estimated income from the CFA sheep sales has been removed from the allocated costs. In this way, you can more easily assess the cost of wool production.

Table 5.18 provides a template for a self-replacing merino enterprise and a sample enterprise from 'Upndowns Farm' to illustrate the COP calculations.

This example indicates the COP for clean kg of wool expressed as $/kg. This calculation can also be done for $/bale or $/kg (greasy price). The structure of the calculation is the same; just take care when adjusting the units if you want another measure for COP.

Table 5.17: Template for prime lambs COP calculations

Enterprise: prime lambs	Example	
a. Enterprise area	1,000ha	
b. Yield	18 hd/ha	
c. Total production	1,800hd	
d. Total income from wool	$75,367	
e. Commodity price	$90/hd	
f. Variable costs	$77,810	
g. Overhead costs	$350,000	
Option 1: COP based on % land use		
h. Enterprise % of farm area	29%	
f. Variable costs	$77,810	
g. Overhead costs	$350,000	
d. Less wool income	$75,367	
i. Other sheep sales income	$22,750	
j. Cost of production = (((**h**x**g**)+**f**)-**d**-**i**)÷**c**	**$45.11/hd**	
Option 2: COP based on % gross revenue		
k. Enterprise revenue	$260,117	
l. Enterprise % of gross revenue	20%	
f. Variable costs	$77,810	
g. Overhead costs	$350,000	
d. Less wool income	$75,367	
i. Other sheep sales income	$22,750	
m. Cost of production = (((**l**x**g**)+**f**)-**d**-**i**)÷**c**	**$27.61/hd**	
Option 3: COP based on % gross margin		
n. Enterprise gross margin	$182,307	
o. Enterprise % of whole farm gross margin	24%	
f. Variable costs	$77,810	
g. Overhead costs	$350,000	
d. Less wool income	$75,367	
i. Other sheep sales income	$22,750	
p. Cost of production = (((**o**x**g**)+**f**)-**d**-**i**)÷**c**	**$35.39/hd**	

A template to complete your prime lamb COP can be downloaded at: **www.grdc.com.au/FBMtemplate-PrimeLambsCostProduction**

Source: P2PAgri P/L / Hudson Facilitation

Table 5.18: Template for SR merino COP calculations

Enterprise	Example	
a. Enterprise area	1,000ha	
b. Yield	16.9kg/ha	
c. Total production	16,898kg	
d. Total income from livestock sales	$80,250	
e. Commodity price	$5.56/kg	
f. Variable costs	$22,306	
g. Overhead costs	$350,000	
Option 1:COP based on % land use		
h. Enterprise % of farm area	29%	
f. Variable costs	$22,306	
g. Overhead costs	$350,000	
d. Less livestock sales income	$80,250	
i. Cost of production = (((hxg)+f)-d)÷c	**$2.58/kg**	
Option 2: COP based on % gross revenue		
j. Enterprise revenue	$93,878	
k. Enterprise % of gross revenue	7%	
f. Variable costs	$22,306	
g. Overhead costs	$350,000	
d. Less livestock sales income	$80,250	
l. Cost of production = (((kxg)+f)-d)÷c	**-$1.98/kg**	
Option 3: COP based on % gross margin		
m. Enterprise gross margin	$151,840	
n. Enterprise % of whole farm gross margin	20%	
f. Variable costs	$22,306	
gj. Overhead costs	$350,000	
d. Less livestock sales income	$80,250	
o. Cost of production = (((nxg)+f)-d)÷c	**$0.71/kg**	

A template to complete your SR merino COP can be downloaded at: **www.grdc.com.au /FBMtemplate-SelfReplacingMerinosCostProduction**

Source: P2PAgri P/L / Hudson Facilitation

The calculations below use the absolute numbers from the sample farm's estimates. The calculations of each option for allocating overheads are:

1. **COP based on % Land Use:**

   i = ((h x g) + f – d) ÷ c

   = ((29% x $350,000) + $22,306 -$80,250) ÷ 16,898kg

   = $43,556 ÷ 16,898kg

   = $2.58/kg

2. **COP based on % Gross Revenue:**

   l = ((k x g) + f – d) ÷ c

   = ((7% x $350,000) + $22,306)-$80,250) ÷ 16,898kg

   = -$33,444 ÷ 16,898kg

   = -$1.98/kg

3. **COP based on % Total Gross Margin:**

   o = ((n x g) + f – d) ÷ c

   = (((20% x $350,000) + $22,306)-$80,250) ÷ 16,898kg

   = $12,056 ÷ 16,898kg

   = $0.71/kg

Please note in this example, when assessing wool and allocating overheads according to the % of gross revenue, the answer is negative. This implies that wool does not have to have a value for this enterprise to cover its share of costs. This anomaly is due to the relatively low % of gross revenue that the wool income provides to the business and the relativity high proportion of gross revenue derived from the CFA sheep. In recent years within the wool industry, the proportion of sheep sales income for a self-replacing enterprise has increased as the values for sheep have significantly increased. This highlights that COP calculations need to be interpreted mindful of context and will vary over time as market prices change. This farm business example indicates that the market is paying prices well above the COP, which may not always be the case.

> It is useful to do these calculations annually, both for projecting expected figures and calculating the actuals. Taking the time to put together the historical results of each year will significantly inform your business decisions into the future. You can elect to calculate COP by hand or you can use programs like P2PAgri to more easily obtain your COP figures.

What strategies can I use to reduce my COP?

One of the big challenges for a farming business is to monitor their COP and to continually assess ways to decrease these costs. As there are many farms producing agricultural commodities but fewer buyers, farmers tend to be 'price takers' and have little power over influencing the prices received for their commodities. There has also been a general trend across the world for 'declining terms of trade' for farmers. This means that prices received have not kept up with increases in the cost of production over time. While this trend has slowed recently, it does continually place pressure on farm businesses to reduce their COP.

Historically, farm businesses have adopted a strategy of increasing the size of their farms. This is evident when you look at paddock maps of farms as paddocks are generally named after the farmers who used to farm that paddock

years ago as their sole farm! As the total arable area in Australia is now finite (not growing), the larger farms have been buying smaller farms. However, as agricultural land values have significantly increased over the last 15 years, the expansion of land has become more reliant on the strategy of leasing and share farming than purchasing land. It should be noted that as farming businesses expand in area, the management system must also be developed to ensure new efficiencies are achieved.

As discussed earlier, the major components for calculating COP include:

- **Area** of production
- **Size** of production
- All **variable costs** and an allocation of **overhead costs** to produce a unit of commodity.

This means that if COP is to be decreased, each of these areas needs monitoring. Business strategies are addressed in Module 3 but some of the fundamental strategies for reducing costs are discussed here.

1. Expanding the area of production

The three major strategies for land expansion are: land purchase, leasing of land and share farming land. Some farming businesses use all three strategies and care needs to be taken to assess the benefits and costs to a farming business before any of these strategies is used to expand the business.

The most common business models that utilise these strategies for expansion are:

- **Family farm** – Farms that are owned and managed by a family. This business model is by far the most common in Australian agriculture.
- **Collaborative farming** – Where two or more farmers combine their resources to generate a larger farming operation. Again, all strategies of land acquisition are available to this model. The benefits of both family and corporate farming can be taken advantage of within a collaborative farming business model. So focus on efficiency and family values can be complementary aims of this farming model. An excellent example of this is the 'Bulla Burra' case study farm.
- **Corporate farming** – Where a corporate farm manages the business resources and the full selection of land acquisition is available. This business model is very focused on efficiency and the separation of management and assets ownership is clearly defined.

2. Increasing productivity by intensive agriculture

Increasing productivity of the same land area is a significant strategy adopted by broadacre cropping businesses in the last 20 years. Improvement to farming systems by rotation selection, timing of sowing, precision agriculture, nutrition management and weed control have provided significant improvements to productivity. However, over the last 5 years, this trend of increasing productivity has been slowing.

General intensification leads to specialisation and irrigation, which has an increased risk profile and requires specialised management skills.

3. Controlling variable and overhead costs

Cost control has been a strategy broadly adopted in Australian agriculture. More recently, advisory boards have increased in popularity to improve management accountability, especially on the cost control side of the business. This is where the projected cash flow and profit and loss are planned at the beginning of each season, and checks are made throughout the season to ensure the plan is being adhered to or adjusted where necessary.

See section **12, Advisory boards, Module 3.**

The challenge for any farm business is to make sound decisions based on your individual strategic direction. All of the above strategies should be continually assessed as part of your business management process.

Action points

- Decide how you are going to allocate overheads.
- Use this same method each season to ensure the accuracy of your calculations for comparison.
- Calculate the COP for all your commodities.
- Calculate the COP given a range of seasonal outcomes.
- Get an expert to help if necessary.
- Download enterprise cost of production templates from:

  www.grdc.com.au/FBMtemplate-CroppingCostProduction

  www.grdc.com.au/FBMtemplate-PrimeLambsCostProduction

  www.grdc.com.au/FBMtemplate-SelfReplacingMerinosCostProduction

5.3 WEALTH

5.3.1 Balance sheet

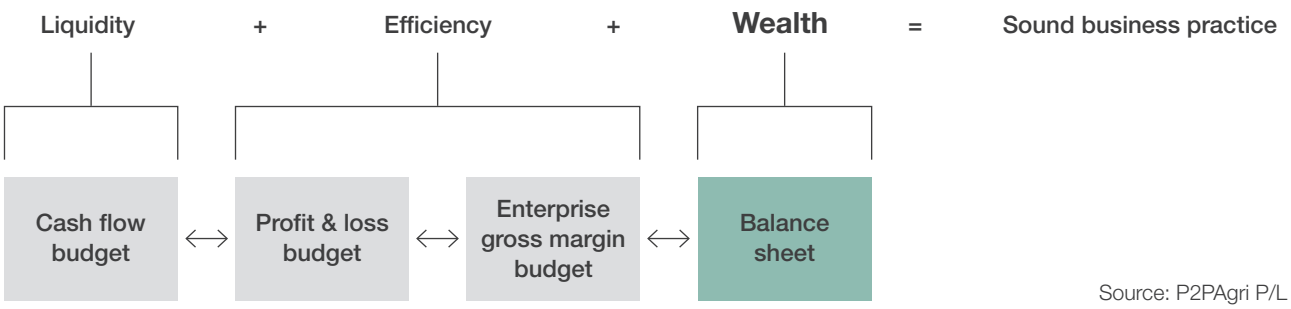
Am I improving the business' wealth position?

This section focuses on the balance sheet as a measure of the business' growth in wealth. Many farmers ask why they need to complete a balance sheet of their business as they are not selling any land.

KEY POINTS

- Even if you never intend to sell the farm, it is important to know what the business is worth and how this is changing over time.
- The balance sheet is one of the most useful financial tools for a business, as it measures net worth at any time.
- Net worth is the most important benchmark of a farm business.
- Undertaking the annual review of the balance sheet will give a greater understanding of the financial health of the business.

Figure 5.24: Key management concepts: Balance sheet



Source: P2PAgri P/L

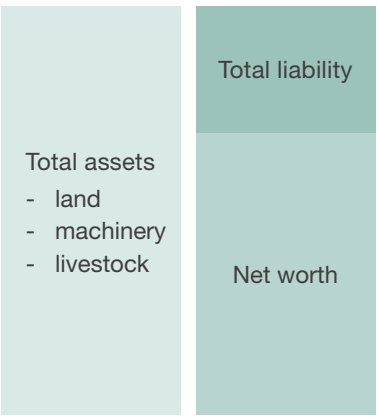
A balance sheet records assets and debts at a given point in time and indicates a farming business' performance and its ability to cope with risk. While the profit and loss budget shows how profit is made in the business, the balance sheet shows how well this profit has been used. Information from the balance sheet and your quality of business management is important to your relationship with your bank. This will affect your business' ability to secure required finance and favourable interest rates from the bank. The reality is that a balance sheet provides information that **indicates the growth in wealth** of a business over time, and is one of the key financial measures of a farm business (Figure 5.24).

What is a balance sheet?

The balance sheet measures the wealth of a business by comparing all assets owned against debts owed. Importantly, the balance sheet lists the expected market value of the various business assets which include land, livestock and machinery. Liabilities are the debts owed by the business and include loans by banks and stock firms, as well as machinery finance and debts to other family members. The balance sheet's main aim is to measure the net worth of the business, which is the difference between the total assets and total liabilities.

Figure 5.25 illustrates the major components of a balance sheet. The key information from any farm balance sheet is its ***Net Worth,*** sometimes referred to as 'equity'. However, equity more commonly measures net worth as a percentage of the total assets. As a general rule, the smaller the total

Figure 5.25: A balance sheet



Source: 'Agriculture in Australia', Bill Malcolm, et al, 2009

liability is relative to the total assets, the more the business is able to manage fluctuating cash flows and servicing debt.

The formulae for net worth and equity are:

- Net Worth = Total Assets – Total Liabilities
- Equity = Net Worth ÷ Total Assets

'Upndowns Farm' balance sheet:

The sample farm 'Upndowns Farm' is used to illustrate a balance sheet in Table 5.19. This indicates that this farm has a total of $11,098,820 in assets and $2,862,868 in total liabilities. This means this farm has:

Net worth = $11,098,820 - $2,862,868
= $8,235,952

Equity (as a %) = 8,235,952 ÷ 11,098,820
= 74%

For dryland farmers, a sound equity is one that is above 70%, so the sample farm's equity is in the 'safe zone'.

Assets

The different classes of assets (most of which are shown in Table 5.19), and how they can be valued, include:

Current assets – These are assets that are easily sold or liquidated. Banks dislike taking security for lending against these assets. Examples of current assets are:

- ***Livestock*** – Livestock can be bought and sold easily, so their value is generally not difficult to determine. Recent market sales can be used as a guide to value livestock. It is important to value each class such as ewes, ewe hoggets and lambs. Note when valuing breeding ewes, prices will be higher than sale yard prices, as breeding ewes are generally not sold as they are needed for the farm's self-replacing flock.
- ***Cash*** – This asset is simply the farm's cash being held in a bank deposit, cheque account and/or farm management deposit (FMD).
- ***Other*** – These assets could include unsold grain or wool, the value of grain sold into grain pools but yet to be paid, and fertiliser on hand that can be sold. Value these items at market rates.

Non-current assets – These are assets that generally take longer to sell, and because of this, banks favour taking security for lending against these types of assets.

- ***Machinery*** – To estimate the value of all the machines that your business owns (including machines with finance loans), give them a 'clearing sale value'. If you haven't undertaken a recent machinery valuation, it is recommended that you take the time to list all the machinery and give them a sale value. Experience shows that if farmers have not done this recently, they tend to under-value their total machinery assets.
- ***Land*** – Land is generally the most difficult asset to value and there are three ways to go about obtaining a valuation for land:

  (1) Use council rates as a guide. However, these are generally based on official valuations of unimproved land from the respective state Valuer Generals Departments, and may not reflect recent changes in market values;

  (2) Employ a professional valuer who will use a variety of information to come to a valuation, or

  (3) Make your own judgement, taking recent land sales in the district and making an adjustment depending on the soil type and infrastructure benefits your land provides.

Whichever method you use, record the method so that a similar standard can be used each season to ensure consistency in assessing the total assets.

Liabilities

Liabilities are generally easier to assess as they are what is outstanding on the various business loans the farm has:

Current liabilities – These are loans that are expected to be paid back within 12 months, typically an overdraft and stock mortgage facility.

Non-current liabilities – These are loans that are expected to be paid back over a period of years, or could be interest only loans that may not get paid back for some time. Such loans include:

- ***Land related liabilities*** – These could be either interest only loans, or loans that are being paid back over a longer time period.
- ***Machinery related liabilities*** – These can be lease or hire purchase loans taken out to purchase large machinery items such as tractors, trucks, boomsprays and headers.
- ***Other liabilities*** – These could be a number of loans which include vendor finance (the person who has sold land but left some equity in the land to be paid back at a later time), or loans from sources outside lending institutions, such as solicitors or relatives

Table 5.19: 'Upndowns Farm' balance sheet

Current assets:	
Livestock	997,000
Cash	0
Other (grain pools & grain-on-hand)	139,800
Total current assets	**1,136,800**
Non-current assets:	
Machinery (written down value)	613,000
Land	9,349,020
Total non-current assets	**9,962,020**
A: Total assets (farm):	**11,098,820**
Current liabilities:	
Overdraft + stock mortgage	
Non-current liabilities:	
Land related	2,600,000
Machinery related	262,868
B: Total liabilities (farm)	**2,862,868**
C: Net worth (farm) (A-B=C)	**8,235,952**

A template to complete your balance sheet can be downloaded at: **www.grdc.com.au/FBMtemplate-BalanceSheet**

Source: P2PAgri P/L

When to use a balance sheet

By their nature, balance sheets reflect the time of the year they are undertaken. A balance sheet calculated after sowing when the overdraft is high will show a different result than one undertaken just after harvest, when most of the grain income has been received. It is how you will be using the balance sheet information that determines when you should complete one:

- ***To assess the net worth trend*** – If you are monitoring the business net worth movements over time, it is suggested you assess the farm business balance sheet a few months after harvest each season. For example, the start of the production year may be identified as the 1st March each year. This is because most of the grain payments should have been received and the overdraft will either have been repaid or will be low. Also, the trend over time will be a good reflection of the trend in net worth, as it was assessed at the same time each season.
- ***To show a bank there is capacity in the equity if further financing is required*** - If you are looking to refinance your loans or take out an additional loan, then the bank will want to assess the business balance sheet at the time of application. In this case, reassess the balance sheet and be proactive by giving it to the bank before it requires this information.

Balance sheet case study:
The benefit of recording over time

The balance sheet is perhaps seen by many farmers as the least important budget to complete, unless they are considering selling land. However, the benefit of using balance sheet budgeting is illustrated in this example of a mixed farm in a low rainfall zone through the prolonged poor seasons of 1999 - 2008. During this time, the average growing season rainfall was well below average (averaged decile 3 growing season rainfall), which included a number of droughts and only a few above average seasons. Figure 5.26 gives a unique view of the farm net profits before tax during this challenging period. While 2001 gave significant profits, most other seasons gave poor or negative profits. If the farm net profits before tax were the only measure monitored over this period, the farmer would no doubt have been experiencing considerable stress and concern. This, incidentally, was the experience of most farmers in the district throughout this period.

As is usual through these periods, it is only the support of the bank that allows farmers to continue to farm. Figure 5.27 shows the increase in debt through this period - when the previous season's crop had failed to deliver enough profits, the farm needed continual increases in overdraft to put in the following season's cropping program. From a starting debt in 1999 of $159k, by 2008 the debt level had increased to $801k, normally a significant cause for concern.

In the face of this run of poor seasons, why did the bank continue to extend the lending? Some of the answer lies in the bank's confidence that management was doing all it could to manage the risk, but also there was an unprecedented increase in land values at this time. From 1999 – 2008, the land value increased by about 90%, which had a significant effect on improving the land asset values in this farm's balance sheet. As banks like land as a security for lending, they were happy to extend the lending where they had adequate security. Figure 5.28 clearly illustrates that although the net profit performance was indifferent, the farm's net worth grew considerably through this period. That is, this growth was not from good net profit performance, but rather from the growth in land value which is reflected in the balance sheet.

As this farmer was focused on the important indicators of both net profits and net worth, the bank could see that the business was still viable, and capable of continuing to farm, even though the run of seasons through this period was unusually poor. Another very important point to note here is that this farmer had a significant history of correctly recording the business financial performance with cash flow, profit and loss and balance sheet budgets. This gave the farmer added confidence in the business performance, where other farmers in the district who did not keep these types of records suffered significantly with mental stress. The added value was that at no time through this period did the bank refuse the necessary increase in lending, as they had a clear picture of the whole business performance. This was not the case for many other farmers in the district who were experiencing similar seasons but had poor financial record keeping.

The management of equity through this period is shown in Figure 5.29. The starting equity was 79%, which increased to 91% at the end of the good 2001 season, but stayed generally above 70% throughout the remainder of this period, that is, the 'safe zone' for dryland farming. In the last year of this period, the equity level was 72%. These are important numbers to help keep the bank comfortable regarding its lending, and hence maintain business viability.

This farm example provides a valuable lesson of why it is important to keep sound financial records, including a record of the balance sheet. It also provides an essential example of how risk can be better managed.

Through the late 1980s, farmers in the Eyre Peninsula area of SA experienced a similar period of poor seasons and at the same time land values fell. In this situation, the banks were not happy with both the decline in profits and net worth, and foreclosed on a number of farm businesses. In very poor situations, it is difficult to maintain viability, but if the financial records are maintained, there is an improved chance the business can trade out of its difficulties.

Figure 5.26: Balance sheet case study farm net profit before tax (NPBT)

Figure 5.27: Balance sheet case study farm total liability trend

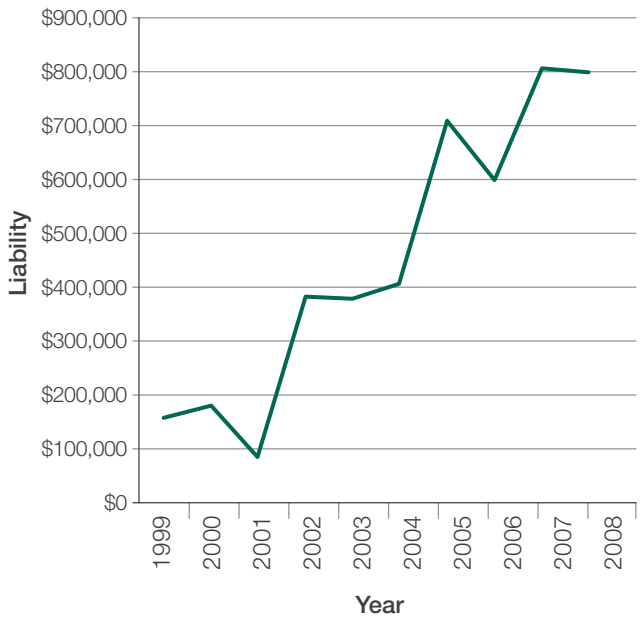


Figure 5.28: Balance sheet case study farm net profit and net worth record

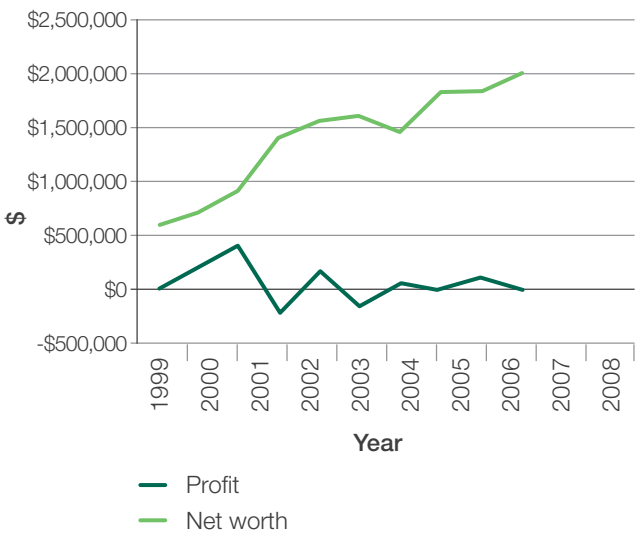
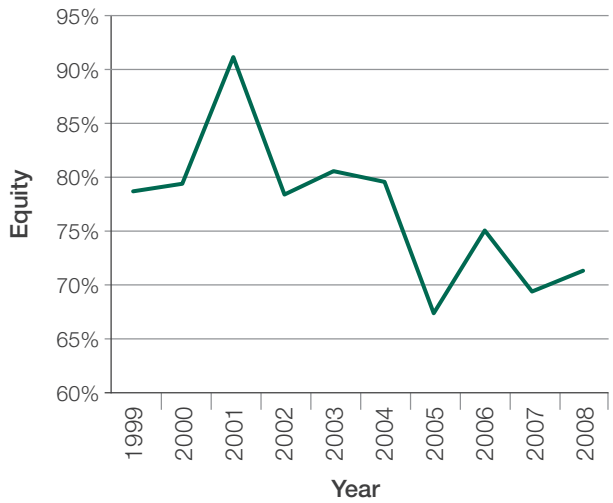


Figure 5.29: Balance sheet case study farm equity records



Source: P2PAgri P/L

Action points

- If you haven't already, calculate your farm business net worth with the use of a balance sheet.
- Calculate net worth yearly to track growth in business wealth over time.
- Be conservative with your valuation of assets so the net worth becomes a conservative measure.
- If you make assumptions when putting the balance sheet together, record these so that the balance sheet assessment from year to year is consistent.
- Download a Balance Sheet Template at: **www.grdc.com.au/FBMtemplate-BalanceSheet**

5.4 WHOLE FARM ANALYSIS: BRINGING THE FINANCIALS TOGETHER

Use all the key financial measures across the season to plan, monitor and evaluate your farm business management.

KEY POINTS

- Measure your business' financial performance at least once a year.
- Recording the business performance will show progress over time, even though you have had to manage the vagaries of the seasons, markets, professional advice and changes in the industry.
- Measuring your business performance will help keep you focused on your goals.
- Maintaining a sound set of farm business management records means you know where your business has been, and provides increased confidence with your management team and your bank. This will improve the management of business direction and decrease stress.

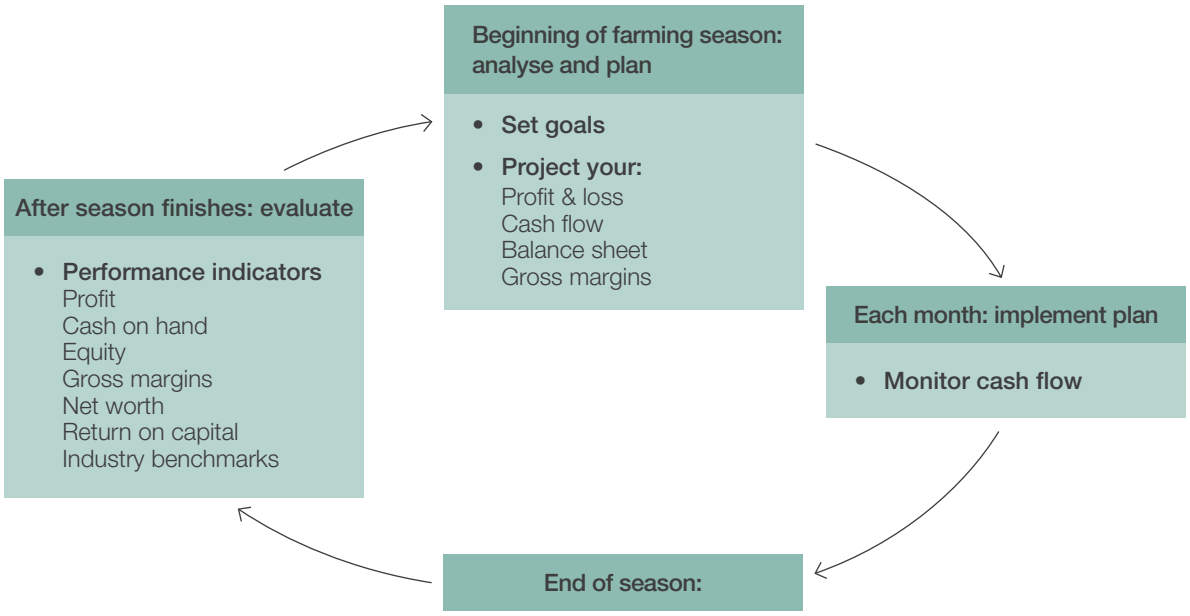
Information from the important key financial measures of liquidity, efficiency and wealth can be brought together for whole farm financial analysis. Just as the dashboard in a car provides up-to-date information on many relevant measures that can guide your driving, so too a financial 'dashboard' provides clarity for the business direction. This section demonstrates how to bring together information from the measures of liquidity, efficiency and wealth to evaluate the performance of the whole business over the season. Reporting on all these financial indicators is similar to developing a 'financial score-card' for your business.

Figure 5.30 shows the planning cycle introduced in Module 1. Adopt what you need from this planning cycle, and spend some time at the end of each season putting together records of those budgets listed under 'performance indicators'.

Effective farm business management encompasses periods of planning, monitoring and evaluation. Use cash flow, profit and loss and gross margin budgets and the balance sheet as planning tools prior to the beginning of the season. Monitor the cash flow throughout the season, and once the season is completed, record the actual results of these budgets.

(Also refer to section **3.4.2, Bringing it all together: cash, profit and wealth, Module 1** as a further guide to this yearly process).

Figure 5.30: Farm business yearly planning cycle



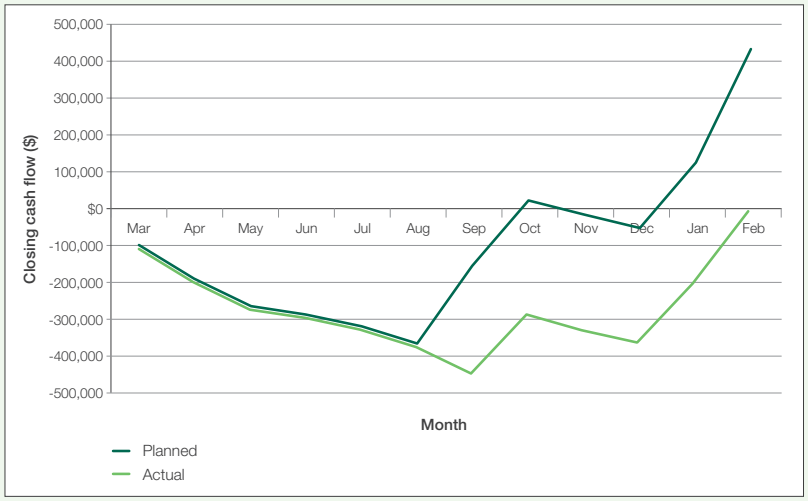
Source: P2PAgri P/L

Table 5.20: Financial dashboard for 'Upndowns Farm'

Financial measures		Projected figures		Recorded actuals	
LIQUIDITY					
• Cash flow budget		Peak overdraft estimated: $369k		Actual overdraft used: $448K	
		Expected to occur in: August		Actually occurred in: September	
EFFICIENCY					
• Profit and loss budget		Projected net farm profit (before tax) of: $350K		Actual net farm profit (before tax) of: $200K	
• ROMC (Return on managed capital)		2.5%		1.3%	
• Enterprise gross margins		$/ha	%TGM	$/ha	%TGM
	Wheat	567	13%	430	12%
	Malt barley	573	7%	473	6%
	Feed barley	485	6%	395	5%
	Canola	769	20%	561	17%
	Beans	650	10%	450	8%
	Clover	442	1%	422	1%
	Chickpeas	331	2%	329	2%
	Prime lambs	609	6%	616	7%
	SR merino	768	34%	775	40%
	Cattle	300	1%	307	1%

Continued on p. 126 >

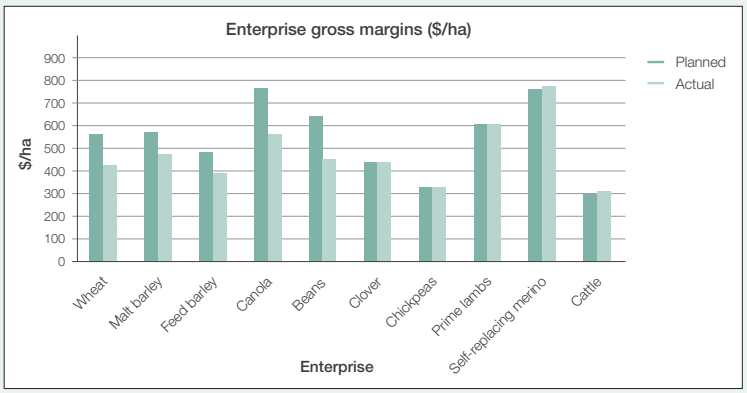
Evaluate planned vs actual budgets



Comments and analysis

- The overdraft was estimated to peak at $369k, but due to a poor season and lower grain prices, it actually peaked at $448k.
- The bank was communicated with in late July and approved the additional overdraft.
- While the peak was projected to be in August, it actually occurred in September.
- Again, because the bank was alerted early to these requirements, they were satisfied with their increased risk.

Current assets:	Planned	Actual
Cash income:		
Wheat	164,250	138,690
Malt barley	72,450	62,400
Feed barley	115,020	90,880
Canola	312,312	247,248
Beans	150,575	100,125
Clover	21,000	16,800
Chickpeas	37,500	30,000
Prime lambs	171,819	171,819
Self-replacing merino	526,703	526,703
Cattle	10,500	10,500
Non cash income:		
Net livestock movements	0	0
Farm gross farm income	**1,582,129**	**1,395,435**
Cash production expenses:		
Cropping variable costs	309,436	312,736
Livestock variable costa	218,574	213,789
General overhead costs	256,800	256,800
Non cash production expenses:		
Managerial allowance	120,000	120,000
Depreciation*	61,300	49,653
Farm EBIT	**616,019**	**442,457**
Interest:		
Interest on existing farm loans	242,435	227,542
Interest on overdraft and stock mortgage	22,950	29,550
Bank fees	300	300
Farm net profit before tax	**350,334**	**185,065**



- The projection of a $350k net farm profit (before tax) was significantly affected by a poor season and weaker commodity prices.
- The actual net farm profit of $200k still meant the farm had a viable season, as shown in the profit and loss budget.
- The poorer season meant efficiency was well down on the projected 2.5% and significantly below the 8% target, indicating there is room for improvement with efficiency.
- The grain gross margins were significantly affected by the poor season.
- The livestock enterprises showed their value in this season, contributing significantly in $/ha and total gross margin (TGM).
- This demonstrates the good risk management strategy provided by the livestock.

Table 5.20: Financial dashboard for 'Upndowns Farm' cont.

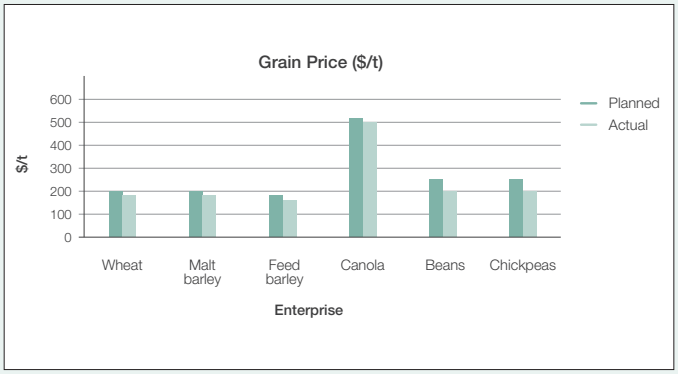
Financial measures		Projected figures	Recorded actuals
WEALTH: Balance sheet			
• Total assets		$11.1m	$11.2m
• Total liabilities		$2.9m	$2.8m
• Net worth		$8.2m	$8.4m
• Equity		74%	75%
KEY PRODUCTION AND PRICE DRIVERS			
• Commodity prices	Wheat	$200/t	$180/t
	Malt barley	$200/t	$180/t
	Feed barley	$180/t	$160/t
	Canola	$520/t	$500/t
	Beans	$250/t	$200/t
	Clover	$2,500/t	$2,300/t
	Chickpeas	$250/t	$200/t
	Prime lambs	$110/hd	$112/hd
	Self-replacing merino	$90/hd	$91/hd
	Vealers	$450/hd	$455/hd
	Wool	$1,200/bale	$1,200/bale
• Grain yeilds	Wheat	4.5t/ha	4.0t/ha
	Malt barley	4.5t/ha	4.0t/ha
	Feed barley	4.5t/ha	4.0t/ha
	Canola	2.2t/ha	1.8t/ha
	Beans	3.8t/ha	3.0t/ha
	Chickpeas	2.5t/ha	2.5t/ha
• Weaning rate		110%	112%
• Average wool cut		6.5kg/hd	6.4kg/hd
• Rainfall average mm		528mm	498mm
• April - October mm		417mm	403mm

Evaluate planned vs actual budgets

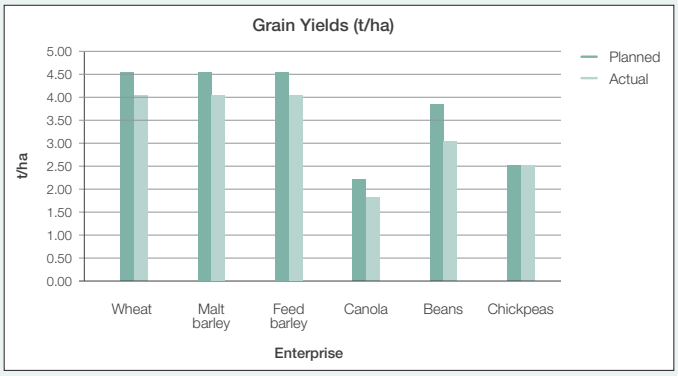
Current assets:	Opening	Closing
Livestock	997,000	997,000
Off-farm	22,000	22,000
Cash	0	257,689
Other (grain pools & grain-on-hand)	139,800	0
Total current assets	**1,158,800**	**1,276,689**
Non-current assets:		
Machinery (written down value)	613,000	551,700
Land	9,349,020	9,349,020
Total non-current assets	**9,962,020**	**9900,720**
Total assets (farm)	**11,098,820**	**11,177,409**
Current liabilities:		
Overdraft + stock mortgage	**0**	**0**
Non-current liabilities:		
Land related	2,600,000	2,600,000
Machinery related	262,868	175,666
Off-farm related	0	0
Total liabilities (farm)	**2,862,868**	**2,775,666**
Net worth (farm)	**8,235,952**	**8,401,743**

Comments and analysis

- The asset levels are sound and the opening equity is 74%, above the minimum desired level of 70%. Even though a poorer year was experienced, the equity did improve to 75%, largely due to a slight decline in liabilities.
- The next few years should see some debt reduction to further improve equity.
- It was concluded that while the goal of achieving a $350k net farm profit did not occur (refer to profit and los budget), the farm's net worth did grow. This means the business is working toward achieving the long-term goal of financial security.



- Commodity farm gate prices were below the expected average for most grains.



- While the expected yields were slightly above district averages, this year's poor season resulted in poorer grain yields. This had a major impact on the reduced net farm profits experienced.

- Rainfall was a Decile 3 this season.

Table 5.20 lists what could be included in a 'financial dashboard' and uses the results of 'Upndowns Farm' to illustrate how this can be done. This checklist could also be used to develop a financial reporting format to guide reporting to a board.

Advisory boards are discussed in section **12, Module 3**.

It takes discipline to maintain an effective farm business management recording and reporting system, but you will gain the following benefits:

- Records developed over a period of seasons will show important trends in your business.
- You will have effective management data to assist you with your decision making.
- Your banker will have greater clarity of how your business is performing and so gain confidence in your management ability.
- Your management team can clearly see how the business is performing against the established goals.

Action points

- Make a list of the financial budgets you will record.
- Create a financial 'score card' tailored to your business and its goals.
- Develop a recording system that makes reporting of these results as simple as possible.

5.5 OTHER PERFORMANCE INDICATORS

The major financial measures of ***liquidity, efficiency*** and ***wealth*** provide the most important view of any farming business, as they provide a whole farm analysis (refer to section 5.4). Once you understand the whole business picture, you can then look into the areas that need strengthening. Financial ratios and benchmarks may provide insight into specific areas of the business that need improvement.

5.5.1 Financial ratios

Understanding your key financial ratios helps manage your farm business and may give insight into different components of the business. This section covers the most commonly used financial ratios.

KEY POINTS

- Ratio trends over several years are a more valuable tool than looking at one year in isolation.
- Context is very important – compare apples with apples!
- Monitoring your business' financial ratios does not guarantee greater profit, but will help to improve your understanding of your business over time.
- Accuracy of data is essential.

Co-contributor to this section: Tony Hudson, Hudson Facilitation.

The use of financial ratio and benchmark analysis has become increasingly common. Banks, for example, calculate most of their financial ratios from information in a tax return, and use these to assess the financial strengths and weaknesses of a farm business.

Note however, that these ratios look at only specific parts of the business, rather than the whole. While they may provide an improved understanding of parts of the business, they may not necessarily provide a solution, and are therefore **no substitute for completing the whole farm financial analysis.**

What are financial ratios?

Financial ratios are used to assess specific areas of the business.

These measures are expressed as a ratio (number of times) or a percentage. As such, they are no more than one number expressed as a percentage or fraction of another number. No one ratio can give an absolute picture of business performance, but in combination, their trends over time can be used to identify areas of strength and weakness within the business.

In many respects, financial ratios are like a soil test. They identify that you have a high or low level of a certain element compared with established standards, but they will not tell you why you have it, how much it will affect yield, or how to manage the problem. Once an area of concern is established, you need to get behind the figures to see what is causing the problem, so physical production **benchmarks** (section **5.5.2, Module 2**) will be closely linked to the financial ratios.

The value of financial ratio analysis as a method for comparing farm business performance depends on the accuracy of the data and on how the data is used to generate the ratio. Make sure that you are comparing 'like with like' if you use a range of data to make comparisons. For example, to compare the profitability of your farm in this season with a neighbouring farm's performance two years ago is of little value – variation in climate, yields, prices and so on mean you are likely comparing 'apples with oranges'!

Financial ratios for a farm business

Whilst there are numerous ratios quoted by finance analysts, for the purpose of this manual, the focus will be on ratios covering five key areas of the farm business. Some of these areas, like **liquidity** (section **5.1, Module 2**) and **efficiency** (section **5.2, Module 2**) have been covered; a broader list has been given to cover the majority of ratios used by banks to assess farm businesses in the following areas:

1. Liquidity
2. Solvency
3. Profitability
4. Financial Efficiency
5. Repayment Capacity

A list of 17 of the more useful ratios assessing a farm business across these five areas is provided in Table 5.21. All of the ratios to measure these areas of your business can be calculated from two budgets detailed in earlier sections of this manual: **Profit and Loss Budget** (section **5.2.3, Module 2**) and a **Balance Sheet** (section **5.3.1, Module 2**).

Please note a sub-set of these ratios, will provide most of the insight into your business across the five key areas. So you can either calculate all 17 ratios or just analyse the subset of 7 key ratios listed in Table 5.22.

Table 5.21: List of 17 financial ratios for farm business assessment

Liquidity	**Liquidity** - Cash, the short-term picture: 'Do we have enough cash to pay the bills this year?' Liquidity considers the availability of cash assets to cover short-term obligations without disrupting normal business.		
	1. Current ratio:	Current assets/current liabilities:	Times covered
	2. Working capital:	Current assets - current liabilities:	Dollars
Solvency	**Solvency** - Business stability/risk: 'How much of this business is really ours and how much belongs to the bank?' Solvency ratios measure the gearing of the business, the amount of debt, leasing and other financial commitments, relative to the owner's equity/assets. Can it withstand an economic downturn? Can it borrow to stay afloat or expand?		
	3. Equity/assets ratio:	Total farm equity/total farm assets:	% equity
	4. Debt/assets ratio:	Total farm debt/total farm assets:	% debt
	5. Debt/equity ratio:	Total farm liabilities/total farm equity:	% debt
Profitability	**Profitability** - Are we making enough money? 'We've got a lot of capital tied up in this place; how is it performing?' Profitability ratios tend to measure the ability of the business to generate profit from its land, labour and capital resources. They remove the effect of scale of operations so comparison can be made between businesses of any size. They provide a useful means to compare businesses in different industries.		
	6. Return on managed assets (ROA):	EBIT/total managed assets:	% of assets
	7. Return on equity (ROE):	NPBT/total equity:	% of equity
	8. Operating profit ratio:	EBIT/total revenue:	% gross revenue
	9. Net profit ratio:	NPBT/total revenue:	% gross revenue
	10. Debt to income ratio:	Total liabilities/gross revenue:	% gross revenue
	NB. EBIT – Earnings before interest and tax NPBT – Net profit before tax		
Financial efficiency	**Financial efficiency** - Tracking the costs: 'We work hard to maximise production; where does all the money go?' Financial efficiency ratios measure how efficiently the business uses its productive capacity. They generally consider the percentage of gross revenue which is spent on costs for inputs, overheads, finance and machinery.		
	11. Asset turnover ratio:	Gross revenue/total assets:	% gross revenue
	12. Input cost ratio:	Variable costs/gross revenue:	% gross revenue
	13. Overhead cost ratio:	Overhead costs/gross revenue:	% gross revenue
	14. Finance cost ratio:	Finance costs/gross revenue:	% gross revenue
	15. Depreciation ratio:	Depreciation expense/gross revenue:	% gross revenue
Repayment capacity	**Repayment capacity** - Ability to service debts: 'Can we actually reduce our debts? Would the bank let us borrow to expand?' Repayment capacity ratios measure the capacity of the business to meet interest/leasing costs and to repay debt. The business needs to provide for living expenses/family drawings and payment of taxes after covering all its costs. At the end of the day, what is left after paying input, overhead, finance, tax and living costs is all that is left to reduce debt, reinvest in the business, invest off farm or improve lifestyle.		
	16. Interest cover ratio:	Operating profit/finance costs:	Times covered
	17. Term debt & lease cover:	(NPAT + finance costs + depreciation) / (total principal and interest payments plus leasing costs):	Times covered

Source: P2PAgri P/L / Hudson Facilitation

Table 5.22: Subset of 7 key financial ratios

2	Working capital:	Current assets - current liabilities	Dollars
3	Equity/assets ratio:	Total farm equity/total farm assets	% equity
6	Return on managed assets (ROMA):	EBIT/total managed assets	% assets
7	Return on equity (ROE):	NPBT/total equity	% equity
11	Asset turnover ratio:	Gross revenue/total assets	% gross revenue
13	Overhead cost ratio:	Overhead costs/gross revenue	% gross revenue
16	Interest cover ratio:	Operating profit/finance costs	Times covered

'Upndowns Farm' financial ratios demonstrated

A profit and loss budget (Table 5.23) and balance sheet (Table 5.24) are used from the sample farm business 'Upndowns Farm'.

The figures from the profit and loss and the balance sheet are used as the reference point for all calculations of the financial ratios in Table 5.25 and for the following interpretation of the figures.

Table 5.23: 'Upndowns Farm' profit and loss budget

Income	$	Formula	
Cash sales	1,582,129	A	
Movement in inventory		B	
Gross revenue	**1,582,129**	**C =**	**(A+B)**
Variable costs	528,010	D	
Whole farm gross margin	**1,054,119**	**E =**	**(C-D)**
Overhead costs	256,800	F	
Depreciation	61,300	G	
Family drawings/managerial	120,000	Gg	
Operating profit (EBIT)	**616,019**	**H =**	**(E-F-G-Gg)**
Finance costs	265,685	I	
Net profit before tax (NPBT)	**350,334**	**J =**	**(H-I)**
Taxation	35,003	K	
Net profit after tax (NPAT)	**315,331**	**L =**	**(J-K)**

Table 5.24: 'Upndowns Farm' balance sheet 2012-13

Formula		Assets		Liabilities		Formula	
		Current assets	**$**	**Current liabilities**	**$**		
		Cash on deposit		Overdraft			
		Debtors		Creditors			
		Livestock	997,000				
		Grain on hand	139,800				
		Fodder					
	M	**Total current assets**	**1,136,800**	**Total current liabilities**	**0**	P	
		Non-current assets		Non-current liabilities			
		Plant and equipment	613,000	Bank loans	2,600,000		
		Land and buildings	9,349,020	Machinery loans	262,868		
	N	**Total non-current assets**	**9,962,020**	**Total non-current liabilities**	**2,862,868**	Q	
(M+N)	= O	**Total assets**	**11,098,820**	**Total liabilities**	**2,862,868**	R =	(P+Q)
				Owner's equity:	**8,235,952**	S =	(O-R)

Source: P2PAgri P/L / Hudson Facilitation

Table 5.25: Calculation of ratios for 'Upndowns Farm'

	Ratio	Formula	Calculation						Result	Weak range	Strong range
	Liquidity ratios:										
1.	Current ratio	M ÷ P	1,136,800	÷	0	x	100	=	Very good	< 1 time	> 1.5 times
2.	Working capital	M - P	1,136,800	-	0	x		=	$ 1,136,800	Negative	Positive/ stable
	Solvency ratios:										
3.	Equity/assets ratio	S ÷ O x 100	8,235,952	÷	11,098,820	x	100	=	74.2%	< 70%	> 90%
4.	Debt/assets ratio	R ÷ O x 100	2,862,868	÷	11,098,820	x	100	=	25.8%	> 30%	< 10%
5.	Debt/equity ratio	R ÷ S x 100	2,862,868	÷	8,235,952	x	100	=	34.8%	> 40%	< 20%
	Profitability ratios:										
6.	Return on assets	H ÷ O x 100	616,019	÷	11,098,820	x	100	=	5.6%	< 2.5%	> 6%
7.	Return on equity	J ÷ S x 100	350,334	÷	8,235,952	x	100	=	4.3%	< 2.5%	> 5%
8.	Operating profit ratio	H ÷ C x 100	616,019	÷	1,582,129	x	100	=	38.9%	< 15%	> 30%
9.	Net profit ratio	J ÷ C x 100	350,334	÷	1,582,129	x	100	=	22.1%	< 20%	> 30%
10.	Debt to income ratio	R ÷ C x 100	2,862,868	÷	1,582,129	x	100	=	181.0%	> 300%	< 100%
	Financial/cost efficiency ratios:										
11.	Asset turnover ratio	C ÷ O x 100	1,582,129	÷	11,098,820	x	100	=	14.3%	< 15%	> 30%
12.	Input cost ratio	D ÷ C x 100	528,010	÷	1,582,129	x	100	=	33.4%	> 40%	< 25%
13.	Overhead cost ratio	(F+G+Gg) ÷ C	438,100	÷	1,582,129	x	100	=	27.7%	> 40%	< 30%
14.	Finance cost ratio	I ÷ C x 100	265,685	÷	1,582,129	x	100	=	16.8%	> 15%	< 5%
15.	Depreciation ratio	G ÷ C x 100	61,300	÷	1,582,129	x	100	=	3.9%	> 20%	< 10%
	Repayment capacity:										
16.	Interest cover ratio	H ÷ I	616,019	÷	265,685			=	2.3 times	< 1 time	> 2 times
17.	Term debt & lease cover	(L+I+G)/XX*	(315,331 + 265,685 + 61,300)			÷	352,887	=	1.8 times	< 1 time	> 1.5 times

XX* equals total annual principal and interest payments, plus any leasing costs (assumed here as $352,887).

A template to complete your financial ratios can be downloaded at: **www.grdc.com.au/FBMtemplate-FinancialRatios**

Source: P2PAgri P/L / Hudson Facilitation

Interpreting the figures:

Liquidity: The business is well positioned as it currently has no short-term debt. This has been the result of this business experiencing some good financial seasons. It would be helpful to know what overdraft limits the bank would approve, so that any short-term shocks can be managed.

Solvency: This is towards the risky end for debt and equity position. The business may have recently borrowed to expand. No cause for alarm, but would like to see several years' results and analyse this trend over time.

Profitability: This business has reasonable profitability, within a reasonable range for all ratios in this section. Reducing debt (if possible) will improve all ratios. Again, these ratios may reflect a business which has recently geared up, like recently purchasing additional land.

Cost efficiency: Costs are generally well managed. The poor asset ratio indicates that gross income is poor compared to total assets. Use of production benchmarks will quickly isolate whether the issue is yield or price related. The poor finance cost control means a focus on decreasing debt would help in the medium term.

Repayment capacity: These results indicate that this business is quite well placed to meet its financial commitments and reduce debt, or invest in efficiency gains to improve profitability.

In summary, the 'Upndowns Farm' has performed at reasonable levels in the year under analysis. While it can meet its financial commitments, there is room to improve profits. Increasing gross revenue at the same cost base is a simple remedy to almost every financial ratio – it reduces the cost of production.

What areas of the business need improvement?

The two financial ratios showing a weak result for 'Upndowns Farm' (highlighted in **orange** in Table 5.25) are:

11. Asset Turnover, and

14. Finance Costs.

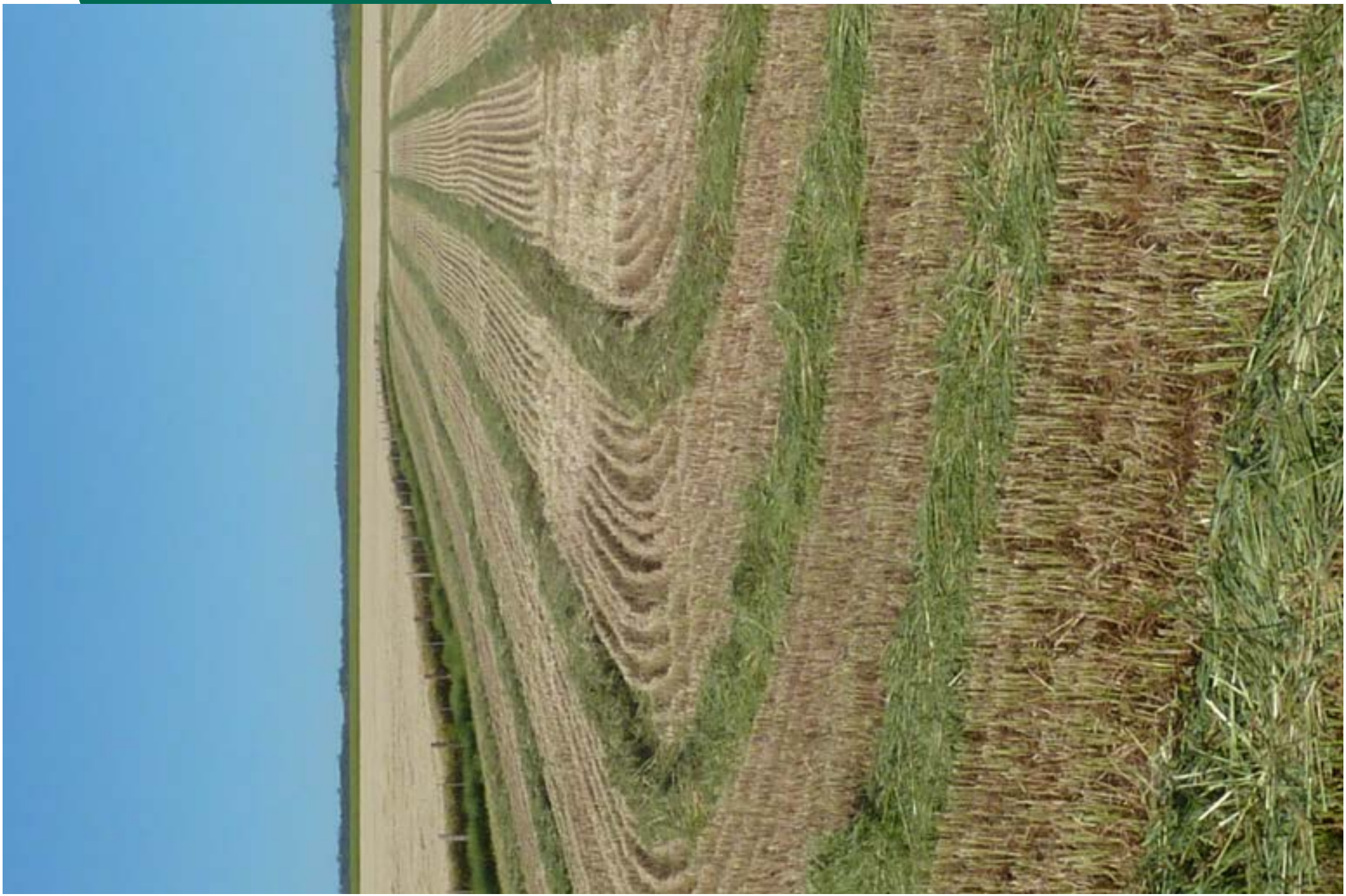
Given gross revenue is a simple function of yield and price, either of these two issues can be quickly confirmed or dismissed with some district benchmarking comparison. If neither is identified as being poor, then there may be a need to look more closely at management performance. Is production at sound levels and are the borrowings well structured? Checking with local production benchmarks and talking with a finance broker may help improve these areas of weakness.

Remember, looking at one year in isolation can be of limited value. You should compare a number of years' ratios and look for trends over time. Is equity eroding, is cash becoming increasingly tight, generally are the ratios improving or deteriorating? Poor ratios are not necessarily a cause for concern, as long as they can be explained. Most businesses would see equity and likely return on equity reduce for a few years after an additional land purchase, but if after 3-5 years, things had not improved, there may be real concern. Context is critical!

It is very difficult to score well on all ratios and the important observations come when assessing these results over time. Complete these ratios annually and develop historical data, so that you can target business weaknesses early.

Action points

- From last year's business results, calculate the 7 key financial ratios listed in Table 5.22.
- Analyse these results. What areas are doing well and what are not doing so well?
- Write down specific actions for your business this year that come from this analysis.
- Share your observations with the management team, accountant and banker.
- Download the Financial Ratios template from: **www.grdc.com.au/FBMtemplate-FinancialRatios**



5.5.2 Benchmarks

Defining your goals will help clarify which benchmarks are the most important to measure for your farm business.

KEY POINTS

- No two businesses – or business people - are the same, so care is needed when comparing your business to others, as you may not be comparing 'apples with apples'.
- Benchmarking figures are averages and used in isolation are of little use without understanding their context.
- Benchmarking figures may be best used to identify the correct questions to ask of your business - they cannot provide solutions! You may need to use the liquidity, efficiency and wealth tools to get those answers.
- In practice, the best comparison to make is against your own business – its performance over a number of years and its progress towards achieving your business goals.

Co-contributor to this section: Tony Hudson, Hudson Facilitation.

Benchmarks are other commonly used performance indicators and are sometimes referred to as ratio benchmarks. The benchmarking process is commonly used for comparative analysis to inform decisions about improving business performance. Benchmarking services are provided by an increasing number of farm consultants, advisers, banks, accounting firms, rural industries research and development corporations and other extension providers. Some farmers like to consider a variety of comparative performance indicators to support their decision making and help identify key 'drivers' to improve their business performance.

Understandably, business operators are often reluctant to discuss publicly the performance of their own business. Using anonymous benchmarking data has provided valuable information for many farmers to begin assessing their own business performance.

What are benchmarks?

Benchmarks are generally average physical ratios of a farming business such as grain yields, water use efficiency, weaning rates, wool cuts and livestock weight gain. Measuring, monitoring and interpreting these average physical benchmarks can add to the production and financial understanding of a farm business (refer to Figure 5.31).

While there are benchmarks for just about anything that can be measured, some of the more common and most useful ones for a farm business are listed in Table 5.26.

Typically, benchmarks are often used as an indicator to compare a farm business with:

- the performance of the same farm in prior year/s or against a budget/plan;
- other similar businesses in the same district; or,
- the performance of many producers across an industry segment.

A number of benchmarking service providers publish their results annually and distribute the results amongst their member businesses. Some also offer their published results for sale to the general public. The results of such benchmarking services typically seek to categorise performance as good, average or poor in a variety of areas. They may also be expressed as falling within a percentage range of other businesses, such as the 'Top 20' percent of similar farms.

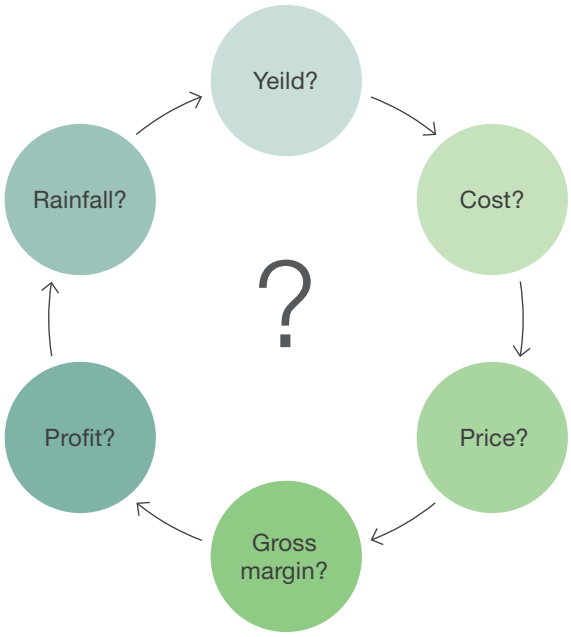
Limitations in using benchmarks

Benchmarks are usually easily calculated and readily available. However, one of their limitations is that they commonly focus on components of the business rather than the whole farm and it can be difficult to interpret such indicators in isolation. A more complete business profile will be gained through an understanding of profit, cash flow, balance sheet and return on managed capital.

Over the years, strong debate has ensued about the role of benchmarking in agriculture. Table 5.27 details some of the arguments over the limitations of benchmarking.

A good example illustrating these challenges is using the benchmark of machinery value per hectare across farm businesses. This will vary greatly depending on whether the farmer runs a continuous cropping business, has a mixed crop/livestock farm or does contract machinery work for neighbours. Each can be a valid and profitable strategy when applied to the right situation and structured correctly. The machinery requirements are different for each farm business and average industry numbers rarely take this into account.

Figure 5.31: What should you measure?



Source: P2PAgri P/L

Table 5.26: Common physical benchmarks

Parameter	Units
Yield (crop)	t/ha
Yield (livestock)	kg/ha
Stocking rate	DSE/ha
Labour (cropping)	ha/labour unit
Labour (livestock)	DSE/labour unit
Labour	$ Revenue/ labour unit
Price received	$/t or $/kg
Production system	$Income/100mm
Machinery investment ratio	$/ha
Fertiliser cost as % of gross income	%
Chemical cost as % of gross income	%

Source: P2PAgri P/L / Hudson Facilitation

Table 5.27: Limitations of benchmarking

Inconsistencies	• Some financial ratios are not consistent with farm business management standards. • Terminology can be confusing and inconsistent, particularly if considering figures from two different data providers. • Data collection methods may not be consistent or accurate. • Unrelated businesses are used for comparison – benchmarks do not take into account variances in physical resources and managerial impact on each business. • When average benchmarking figures are used: for example, for appropriate farm decision making, information about marginal effects of changes is required. It should be unique to your business and not based on averages. ➤ Section **3.1.2, Production Economics, Module 1** discusses marginal effects.
Information they do not provide	• It is difficult to quantify management impact on outcomes. • Good physical or financial performance may not reflect sustainable practices or long-term viability of agricultural systems. • Benchmarks say very little about the subject business' appetite for risk. • Using whole farm benchmarks may tell you that you are performing well or poorly, but will not tell you why, or what to do differently. • Often take no account of debt/leverage within the business. • May vary on whether or not off-farm income is included. • Generally based on historical data - there is concern that this information is used to direct future business decisions, when the likely impact of these decisions on the whole farm business is not well known.
Validity of comparisons	• No two farm businesses or farm operators are the same, but comparing data assumes much similarity. • Numbers mean little unless you truly understand them. • Benchmarking is only one tool, not the panacea that some suggest. Benchmarks of another business may have very little relevance to your business. • Involves an implied cause and effect - in practice, the actual response to inputs should be assessed on a case-by-case basis.

Source: P2PAgri P/L / Hudson Facilitation

Potential benefits in using benchmarks

Table 5.28 outlines a number of benefits in using benchmarking figures in agricultural businesses. These, as well as the limitations, need to be taken into account when considering benchmarking the performance of your own business, either against itself or against others.

There is certainly some value in the approach of 'compare and contrast': in knowing benchmarks for basic performance (such as the ranges of crop yields, stocking rates and lambing percentage) to give context within your district, if for no other reason than to gain an understanding of what is possible. What *could* be achieved is not necessarily the same as what *should* be achieved. Benchmarking may tell you that something is wrong, but it may not accurately identify where the problem lies or what is most profitable for your business.

Similarly, there can be valuable learning from others on the physical production aspects of the business – what is 'best practice' and what might be achieved if it is implemented? However, such information should be used in context. There is no other farm quite like yours – they are all different in terms of size, soil type, subdivision, enterprise selection, debt levels and management, and each business will have different goals and attitudes to risk. Benchmarking production parameters about other businesses do not tell you how well they are achieving their broader objectives, whether they are successfully creating wealth, generating profit or achieving a variety of other goals. So although they may be of some use, you must remember that they represent numbers which are achieved on someone else's land und`er someone else's management towards achieving someone else's goals.

> Of far greater value to your business is using benchmarks to compare your business against its own historical and budgeted whole farm performance i.e. measure the performance of **your land** under **your management** towards achieving **your goals**.

Using benchmarking in this way will largely eliminate the vagaries of data collection, accuracy and interpretation, as long as you collect and measure your own data in the same way every year.

A set of farm business benchmarks is provided in Table 5.29 which demonstrates the last four years of a farm's performance against its 10-year average. This is based on a continuous cropping farm in a low rainfall area and was recorded through a period of lean seasons.

Obviously, context is still useful and the numbers you generate may tell only part of the story. However, done in this way, benchmarking can be a useful analytical tool for many farm businesses.

For example, from the benchmarks in Table 5.29, a farmer may ask specific questions of his business that in turn lead to further questions in a search for solutions:

Q: Is my farm viable (Net farm profit)?

A: Just! Over this ten year period, it made an average annual profit of only $45,517 which does not provide much leeway for risk.

> What do I need to focus on to improve profitability?

Q: Is the business wealth growing (Net worth)?

A: Yes. However, as profit levels have not been excellent, this growth in business wealth may be due to increased land values.

> Is this growth sustainable? If land values do not continue to increase at this rate, how does my business generate wealth?

Q: Am I over-capitalised in machinery (Machinery value/cropped ha)?

A: Yes, at $290, slightly. $260/ha is viewed by industry as being the average.

> How do I improve this? Do I increase productivity (area of production) or decrease machinery capital costs?

Table 5.28: Benefits of benchmarking

Individual farm assessment	• Provides useful additional information to whole farm analysis. • Provides a useful matrix for self-assessment. • Helps build a profile of strengths and weaknesses within a business. • Provides a framework to test accepted beliefs.
Physical information	• Physical benchmarking can support improved enterprise management.
Financial information	• Helps identify and focus efforts on key 'business drivers'.
Comparative information	• Comparison of your business performance to similar businesses (within limits). • May provide motivation to improve your own business performance. • Compare your business against itself each year which will highlight trends over time.

Source: P2PAgri P/L / Hudson Facilitation

Table 5.29: Actual farm benchmarking data from a low rainfall sample farm.

Years	1	2	3	4	10-year average
Individual farm analysis					
Net farm profit:	-$36,078	$60,056	-$4,975	$82,976	$45,517
Gross farm income:	$195,313	$340,401	$398,855	$645,836	$312,441
Net farm profit as % of gross farm income:		17.6%		12.8%	30.4%
Net worth	$1,098,090	$1,422,828	$1,461,165	$1,554,334	
Closing equity	85.2%	88.5%	87.6%	87.4%	
Gross farm income from cropping %	71%	90%	88%	91%	81%
Gross farm income from livestock %	28%	10%	12%	8%	18%
Total overhead costs/gross farm income	18.1%	10.4%	7.4%	6.6%	16.6%
Total financial costs/gross farm income	5.7%	6.2%	4.7%	5.4%	4.2%
Cash flow return per dollar spent	$1.26	$1.69	$1.27	$1.35	$1.94
Machinery value/cropped ha ($/cropped ha)	$270	$319	$306	$209	$290
Average overdraft interest paid		7.42%	9.17%	7.22%	7.94%
Total chemicals ($/cropped ha)	$13.39	$18.23	$21.88	$24.77	$16.18
Fertiliser ($/cropped ha)	$16.57	$15.24	$22.87	$46.96	$20.48
Holidays per labour unit (days)	9.1	9.1	13.6	9.1	12.8
Training days per labour unit (days)	4.5	4.5	36.4	3.6	8.8
% Arable land cropped	66%	100%	78%	90%	65%
Land value ($/ac)	$96	$181	$202	$222	
Cropped land/labour unit (ha)	760	854	912	1,307	773
Hard wheat farm gate price ($/t)	$200	$163	$365	$301	$226
Feed barley ($/t)	$110	$121	$228	$198	$167

Source: P2PAgri P/L

Using your own benchmarks

In order to benchmark the performance of your own business against itself, you must first establish clearly defined goals, both at a whole farm/business level and then at an enterprise level. Business performance can only be judged against goals. Business drivers fundamental to achieving these goals must be identified, then used to determine specific and measurable objectives which will propel the farm towards achieving *your* goals. What the neighbours do is of far less relevance to you than identifying your own goals and striving to achieve or surpass those goals year after year.

The role of benchmarking information can therefore be seen as an important supporting source of background information. It is not a replacement to the proper whole farm business analysis of **specific questions** for **specific businesses** based on the specific resources available and the **owner's goals**.

Keys to maximising benefits from benchmarking:

Focus on your goals:

- Establish clearly defined and measurable goals for your business.
- Know what questions you want answered and remember benchmarking may not give you those answers.
- Focus on issues which your management can influence or control.
- Ensure that your use of benchmarking leads to changes for the better in how things are done on the farm.

Data analysis:

- Focus on your own performance – it is much more important than the neighbours. Compare 'apples with apples' – make sure data is relevant to your business.
- Analyse what is really being measured and how it is being measured.
- Make sure you understand the numbers and how they are calculated.
- Remember, benchmarking has significant limitations.

Record keeping:

- Develop a robust physical and financial recording system.

Develop budgets:

- Calculate the cost of production for the commodities you produce – these could be of more value to your business than any other benchmark.
- Undertake good farm budgeting and business planning.
- Track budget to actual performance.
- Combine benchmarking with sensitivity analysis when making decisions.
- Your best long-term financial benchmark is growth in net worth.

No amount of benchmarking information about other farms will be as valuable as good budgeting, business planning and excellent record keeping based on your own business. There are dozens of things that can be measured, but ultimately, whole farm profitability is the key.

Farm business analysis focuses on the balance sheet, profit and loss, enterprise gross margin analysis and cash flow. Preparing sound budgets for each of these reports and using them as a starting point for whole farm benchmarking is fundamental to good farm business management.

Action points

- Develop a list of financial indicators and benchmarks to monitor the progress of your business toward achieving its goals.
- Create a yearly recording system, so that this valuable information is recorded over time and used to assess trends in your business.
- Review the business financial indicators and benchmarks, and record needed business and management actions.

5.6 FARM BUSINESS MANAGEMENT VERSUS TAX ACCOUNTING

Are you getting the most out of your tax return? What does it tell you about your business?

KEY POINTS

- If you do nothing else with your finances, at least understand what your tax return is telling you!
- If you don't understand your tax return, at least know what questions to ask your accountant about your tax return.
- What key business information does your tax return not tell you?
- If you want a better business, move your financial understanding beyond your tax return.

The annual tax return

As with any Australian business entity, farm businesses are legally required to complete an annual tax return, so by default, tax returns remain the number one financial record of an Australian farm business. For some farm businesses, this means numerous tax returns as they can have a partnership, a number of trusts and maybe a company structure, each requiring a tax return. Usually, a qualified accountant is used to complete the annual tax returns.

Prior to the advent of the Goods and Services Tax (GST) in 2000, many farmers would take their 'shoe box' full of receipts to the accountant annually for the tax return to be completed. Now, having to submit the Business Activity Statement (BAS) at least quarterly means farm business finances are being recorded better than ever, usually with an accounting software package.

The benefit of a tax return being a legal requirement is that it compulsorily sets up a sound financial recording discipline in a business. The main problem with tax returns is that they are completed using the Australian Taxation Office (ATO) guidelines and rules, and so do not provide a good set of accounts needed to more effectively manage the business. Tax returns are undertaken to assess tax liability only, not vital business information such as management profit, business equity and efficiency.

With some further effort, the information collected for tax returns can be turned into a set of farm management budgets, which provide the fundamental measure of farm performance and sustainability. As tax returns have to be completed, we might as well understand what they are telling us about our business!

Different levels of business understanding

There is a chronic need for farmers to understand the financial performance of their business. If you're not measuring business performance, how do you know how well you are doing?

The annual tax return, while not the best source of financial information on your business, provides at least a start in understanding parts of your business.

Unfortunately, few farmers know how to 'read' their tax returns, as illustrated by the following examples:

Two farming businesses, different in both size and location, had taxable losses in each of the last 5 years and yet had not grasped the financial difficulties they were really facing. No, this does not mean that they had used good accountants who had structured the losses to allow them to pay 'no tax'. This is a dated way of thinking how well your accountant is performing!

Five taxable losses in a row mean that these businesses are not travelling well financially. Yet the business owners appeared to have little understanding of the significance of this result, and what is even more concerning is that accountants had apparently not brought this 'downward financial spiral' to their clients' attention!

The really challenging question is who is responsible for this lack of understanding? Part of the answer may be that many accountants are compliance driven, rather than providing good management advice. So the answer isn't 'totally the accountant's fault'. After all, someone in the business had to sign off for the tax returns to be submitted! Perhaps the business owners did not ask the right questions of their accountant, but as owners, they must accept final responsibility for keeping track of their farm business viability.

Your tax return shows only part of the financial picture of your farm business.

Source: P2PAgri Pty Ltd

What information is in a tax return?

Simply, a tax return tells you what tax, if any, has to be paid to the ATO.

However, tax returns can also provide other useful information. Banks value the information in tax returns because they are legal documents, and are expected to be accurate. Two other specific sources of information are the farm business management profit and loss budget, and the balance sheet. These two budgets are covered in sections **5.2.3** and **5.3.1, Module 2**. As they are not fully reported in a tax return, the tax return should not be relied upon as the sole measure of business viability or performance.

Table 5.30 highlights what your tax return **does** and **does** not tell you about profit and loss, and balance sheet.

What additional information can a good accountant or financial adviser get from your tax return?

- Business trends

The main question arising from Table 5.30 is whether you or your accountant track profit and loss and the balance sheet information from year to year in order to understand the trends in the business. As a prudent business manager, you should be actively seeking this information. With some added effort, a farm business management profit and loss and balance sheet could be compiled from the completed tax return. The following questions can then be answered:

> Was my business profitable in the last financial year?

> What is the business net worth and equity at the end of the financial year?

> How did my farming business perform compared to other forms of investment?

> What was the growth in net worth of the business?

> Given these performance results, what could I learn from last season to help improve my management in the coming season?

A good accountant or financial adviser should be able to assist with developing sound farm business management information from the tax return to provide answers to these vital questions.

If your accountant or financial adviser cannot answer these questions and/or do not consider this information vital to the running of your business, then find an accountant or financial adviser who can help you.

- Financial ratios

All 17 financial ratios outlined in section **5.5.1, Financial Ratios, Module 2** can be calculated from the management profit and loss and balance sheet developed from your tax return.

Do not ignore recording the poor seasons

It is psychologically easier to measure a good financial performance rather than a poor one. So, the temptation is to only record the business performance in good seasons. The challenge is to do the recording regularly, so the trends can be assessed.

Value of recording both poor and good seasons:

In the early 2000s, a benchmarking activity was conducted with farmers in South Australia, and at one stage, over 160 farms were submitting their business data. At the time this recording began, a number of good seasons ensued. When a poor season eventuated, the number of participating farms dropped to 20.

Most farmers did not want to record the financial outcomes from poor seasons as they would show losses. It would have been like being handed back your maths test with a fail written over it!

The 20 farmers who remained were involved in two farmer discussion groups being run at that time. They kept recording their financial and benchmarking results through the run of poor seasons and that was when the real learning occurred. The focus was firmly on strategies to minimise losses. This highlights the benefit of recording the business performance through good and bad seasons, as your business needs to improve its management in both.

Table 5.30: Quality of information reported in a tax return

	What your tax return DOES tell you	What your tax return DOES NOT tell you	What gives the BEST picture of your business
Profit and loss	• The **profit and loss** in the tax return only reports tax liability. • If the business is making taxable 'losses', then this is an indication the financial performance in that financial year may *not be* good! • They can indicate financial trends in the business. For example, if taxable losses have occurred over the last few seasons, then these indicate the business could be heading in the wrong direction to maintain financial viability.	• The **profit and loss** does not take into account the **family drawings** on the business because these are not tax deductable business costs. • In a financial year where the farming business showed taxable losses, the financial performance could be far worse as family drawings have not been taken into account. • Note with dryland farming, the use of a financial year means income of one season is lined up against the costs of the next season. So, tax profits are not representative of the same season.	• Calculate your own profit and loss budget for the farming year (section **5.2.3, Profit and loss budget, Module 2**) and include family drawings expenses. This gives a more complete picture of the profitability of your business.
Balance sheet	• The **balance sheet** in the tax return does show what the **total debt** is on the 30th June each year. • Again, if total liability is increasing from year to year, it indicates an increased reliance on the bank to maintain the business. This *may* also not be a good sign for the business, depending on the reasons why the debt is increasing.	• The balance sheet does not have the most valuable capital items, land, livestock and machinery, included at the current market value. • So, the business's **true net worth** is not measured by a tax return's balance sheet. • Net worth is the most valuable benchmark that needs to be accurately measured each year in a farming business, to see if real progress is being made. It is certainly important to your banker – just ask them!	• Calculate your own balance sheet at the beginning of each farming year (section **5.3.1, Balance sheet, Module 2**). • This gives a more complete picture of the wealth position of your farm business. If completed over time, this will show what wealth is being generated in the business.

Source: P2PAgri P/L

Benefits of using farm management budgets over tax return information

For many, the temptation may be to 'go the easy route' and rely just on tax returns for recording business financial performance. If you want a mediocre business, then a tax return is all you need, and your business may be making decisions 'blindly'. However, if you wish to take control of the business financial performance, then develop a set of liquidity, efficiency and wealth measures to help assess your business performance.

Information that tells you the relative profitability of each enterprise on the farm, the efficiency of the whole farming business, the state of the cash flow and balance sheet of the farm, and an understanding of profitability, will help you to assess how well risks are being managed. A sound set of farm management budgets will give you this information. A tax return at best can only provide an approximation of business profitability, an understanding of the total liabilities at the end of the financial year, and that is all!

So to clearly steer your business toward continual success and sustainability, it would be better to see all the instruments clearly on the 'business dashboard'. This is what a sound set of farm management budgets will give you. Relying solely on tax return information is like steering your business with a 'fog affected' windscreen, with only two gauges visible on the ten gauge dashboard!

Should my goal be to increase profits or go for a lower profit to decrease tax?

This is an old 'chestnut' where some farmers say a 'good accountant is one who manages the books so you don't have to pay tax'!! This however, is misguided because if you haven't paid tax in the last few years, it is highly unlikely you have made any money and the business is going backwards.

Your goal should be to make as much profit as you can. In this way, you can build the business financial wealth and improve its ability to weather poorer seasons when they occur. Once you have made profits, look at ways with your accountant to minimize the tax you need to pay. This is a legitimate and sound business strategy.

How do I find a good accountant?

Before you answer this question, you will need to identify what you need your accountant to do. Understanding the main goals for running the business will guide what accountant and/or farm adviser you should use. An accountant's core skill is in completing tax returns and assessing tax liability. If that is all you want your accountant to do, then any qualified accountant will fulfil this need. If you wish to have the improved farm business management information outlined earlier in this module to guide better management decisions, then ask your current accountant if they can provide these services. If they can't, then seek out other accountants who can provide this service. It may be a matter of inquiring of enough accountants until you find one who does.

Why do I have so many legal entities to run my farming business?

Some farming businesses have a number of legal entities such as partnerships, family trusts and maybe a company to run the business. If you are one of these businesses and do not understand why you have so many, then the answer may be that you have too many! A business structure needs to be understood for it to be well managed. Ask your accountant to help you understand the need for these entities. Accountants help farmers set up these multiple business structures to assist with tax planning and family succession, and in some cases, to protect the farm assets from the impact of divorce. Just remember, the more legal entities you have, the more you will pay in accountancy fees to complete the necessary tax returns.

What does the tax return tell me about the future?

By definition, a tax return is an historic record of what has happened in that particular financial year. So it is directly influenced by the season and the commodity prices experienced in that financial year. As a financial tool to help predict the future, its usefulness is restricted, and depends on how well it models the seasonal and commodity price outcomes for the coming seasons. For predicting possible outcomes, it is far better to use a good set of farm management budgets with conservative expected yields and commodity prices. You could also go one step further and model both a poor and good season, which will give the range of possible results and help judge the financial risks to the business. This approach is called scenario analysis which is covered in section **11, Analytical tools, Module 3**.

Action points

- Challenge your accountant to help turn your tax return into sound management information.
- Assess your business trends over the last 5 years in terms of:
  - Taxable profits
  - Liabilities
- Evaluate whether these results indicate the business' goals are being met.

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GRDC RESOURCES

Other information relating to the topics covered in Module 2 can be found in the following GRDC Fact Sheets and resources:

Balance Sheet (P2Pagri P/L, 2014)
http://www.grdc.com.au/GRDC-FS-FFT-BalanceSheet

Benchmarking (P2Pagri P/L, 2014)
http://www.grdc.com.au/FBM-Benchmarking

Cash flow budget (P2Pagri P/L, 2013)
http://www.grdc.com.au/GRDC-FS-FFT-CashFlowBudget

Cost of production (P2Pagri P/L, 2013)
http://www.grdc.com.au/GRDC-FS-CostOfProduction

Crop gross margin budget (P2Pagri P/L, 2013)
http://www.grdc.com.au/GRDC-FS-FFT-CropGrossMarginBudget

Farm business costs (P2Pagri P/L, 2014)
http://www.grdc.com.au/FBM-FarmBusinessCosts

Farm gross margin and enterprise planning guide (Rural Solutions SA, 2014)
http://www.grdc.com.au/FarmGrossMarginGuide

Filling the farm labour gap (ORM, 2013)
http://www.grdc.com.au/GRDC-FS-FarmLabourGap

Improving time management and labour efficiency (ORM, 2013)
http://www.grdc.com.au/GRDC-FS-FarmLabour-TimeManagement

Key financial ratios (P2Pagri P/L, 2014)
http://www.grdc.com.au/GRDC-FS-KeyFinancialRatios

Livestock gross margin budget (P2Pagri P/L, 2013)
http://www.grdc.com.au/GRDC-FS-FFT-LivestockGrossMarginBudget

Machinery investments and costs (ORM, 2014)
http://www.grdc.com.au/FBM-MachineryInvestmentAndCosts

Profit and loss budget (P2Pagri P/L, 2013)
http://www.grdc.com.au/GRDC-FS-FFT-ProfitLossBudget

Recruiting and inducting new employees (ORM, 2013)
http://www.grdc.com.au/GRDC-FS-FarmLabour-Recruiting

Simple and effective business planning (ORM, 2014)
http://www.grdc.com.au/FBM-SimpleEffectivePlanning

The benefits of separating land assets from the operating costs (ORM, 2014)
http://www.grdc.com.au/FBM-LandAssetsVsOperatingBusiness

Valuing family drawings and your management (P2PAgri P/L, 2014)
http://www.grdc.com.au/GRDC-FS-ValuingManagement

What your tax return tells you (P2Pagri P/L, 2013):
http://www.grdc.com.au/GRDC-FS-TaxReturn