

3 FARM BUSINESS MANAGEMENT

Economic thinking, which forms the basis of good farm business management, can be a challenging area. This section summarises the important parts of economic thinking and how it relates to management.

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3 FARM BUSINESS MANAGEMENT

Having a clearer understanding of your farm business financial performance is a critical step toward improving business profits.

KEY POINTS

- Economic thinking is fundamental to sound farm business management.
- Measures of liquidity, efficiency and wealth give the complete business picture.
- Maximum production does not mean maximum profit.
- The key to effective farm business management is to prepare, not predict.

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

The more traditional part of farm business management is about applying economic thinking to make decisions about managing the farm business. A business always has limited resources. For a farm business, this includes land, labour, management skill, finance, machinery and livestock.

It is human nature to want more of something that is valued, which could be part of the business' vision, but managers have to manage within the resources they currently have or can control. Economic thinking is about how the limited resources of the business are utilised to maximise goals, including building wealth. Managing the resources we control to make profit is a means to this end. This may sound simple, but there is a high degree of risk and uncertainty with seasonal variability and market volatility, which makes farm management decision making and operations difficult.

'...trying to grow the most profitable crops, trying to reduce our costs. We all know what the answers are to growing the highest yielding crops out there, but it's no good if it's going to cost us more to grow than we're going to make out of it. No matter if it's the sheep or the cropping side of things, it's the \$/hectare. It's profit at the end of the day. It's just a bottom line figure for us. If we can focus on the bottom line all the time, I think that's the best way to run the business.'

Scott Nicholson,
'Bretton Estate', Campbell's Bridge, Victoria

3.1 ECONOMIC THINKING

3.1.1 Scarcity and opportunity cost

Every business has to confront **scarcity** (i.e. limited resources). We each have a limited capacity to fulfil a potentially unlimited list of wants and needs. From a consumer perspective, fulfilling our needs and wants provides a level of **utility** (satisfaction) to the consumer. For most people, income limits our capacity to fulfil our needs and wants, and we have to make choices about how we spend our (relatively scarce) income to maximise the satisfaction we gain from it.

In a production context, for example, a decision to do one thing, such as purchasing the latest header, may limit the capacity to do another thing, such as purchasing additional land. This decision therefore has an **opportunity cost** - i.e. something else is given up in order to make this choice possible, which in this instance is purchasing more land. In farm economics, all costs are opportunity costs.

Opportunity cost is an economic concept that can be applied to all business decisions on the farm. Essentially, when you have limited financial resources, with each decision making process, management should be asking, 'Is this the best use of the scarce finances available to the business?' A method

to assess the economic outcome of alternate strategies is '**scenario analysis**'. The key to this economic concept is to make decisions that continually help the business achieve goals that fulfil its vision.

➤ **Analytical tools** are discussed further in section 11, Module 3.

3.1.2 Production economics

Production economics is about the decisions farmers face while aiming to achieve their goals from limited available resources. **Production functions** (also called response functions) are the relationships between resources used (land, labour, capital, water) and the resulting output. For example, if we have a fixed amount of one resource, such as land, more output can only be generated by adding additional variable resources to it, such as fertiliser, fuel, chemicals, labour, irrigation water and so on.

In agriculture, production functions are not usually linear relationships beyond the initial stage of inputs used i.e. the

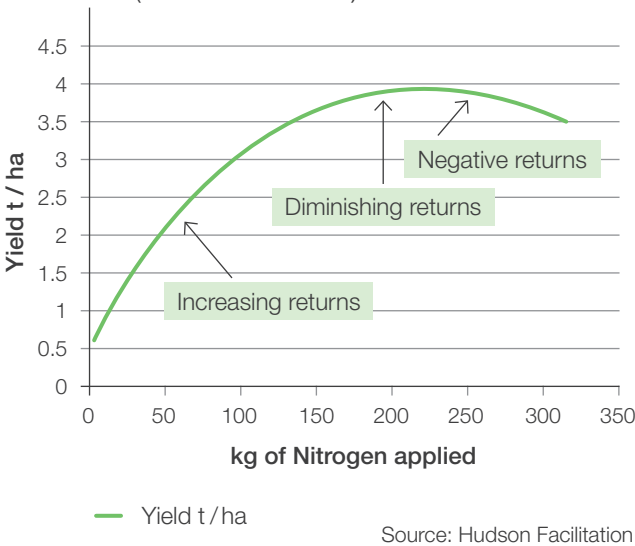
law of diminishing marginal returns applies (see below). For example, a predetermined amount of fertiliser will not always grow a known amount of grain; nor will doubling or tripling the amount of fertiliser necessarily double or triple the yield, even if all other conditions are identical. If no fertiliser were applied at all, there is usually sufficient residual soil nutrition to generate some level of yield as long as reasonable rainfall occurs during the growing season.

Knowing the potential production function of inputs to output that may apply to your crops will help to identify the 'best-bet' input levels that could give the best profit.

A. The law of diminishing returns

The **Law of Diminishing Marginal Returns** describes the relationship between varying levels of an input (e.g. fertiliser) and the resulting output (e.g. grain yield). As outlined above, output from a certain input is not linear beyond some level of input. Typically, beyond a certain point, further units of input can actually decrease output. Figure 3.1 illustrates this effect when increased levels of nitrogen are applied to wheat: the first 125kg/ha of fertiliser gives a clear and strongly positive increase in yield, from about 0.5t/ha to around 3.5t/ha (i.e. **increasing marginal returns**). However, as more units of nitrogen are added, the additional grain produced from each additional unit of nitrogen applied becomes less (i.e. **diminishing marginal returns**). Eventually, a point is reached where additional fertiliser input has a toxic effect and leads to a decrease in total yield (i.e. **negative marginal returns**).

Figure 3.1: Yield response to fertiliser input (Production function)



What are the **financial implications** of this yield response? If a farmer's aim was purely to maximise yield, then in the example above, the farmer would apply 200kg of fertiliser to the wheat crop. However, most profit-driven farmers would advise against this level of input: it increases the risk of a negative gross margin if maximum yield is not achieved. It also ties up significant additional working capital in the wheat crop, some of which would be better spent on other variable inputs to other crops. This relationship between nitrogen and yield will vary between rainfall zones and seasons, so check with your agronomist what this relationship is likely to be for crops in your area.

This relationship of diminishing marginal returns to extra variable inputs was clearly illustrated in a series of fertiliser trials conducted at the Hart field trial site near Clare, SA, in the poor rainfall seasons of 2005 - 2007. The trial compared both a number of 2-year rotations and the level of fertiliser input (see Figures 3.2 and 3.3), and results reinforced the principle that input to maximize yield does not provide the maximum profit. Three fertiliser levels were assessed:

- Low
- Strategic (the adviser's recommendation, depending upon the season)
- High

Figure 3.2: Trial gross margin results for the wheat/wheat rotation 2005 & 2006

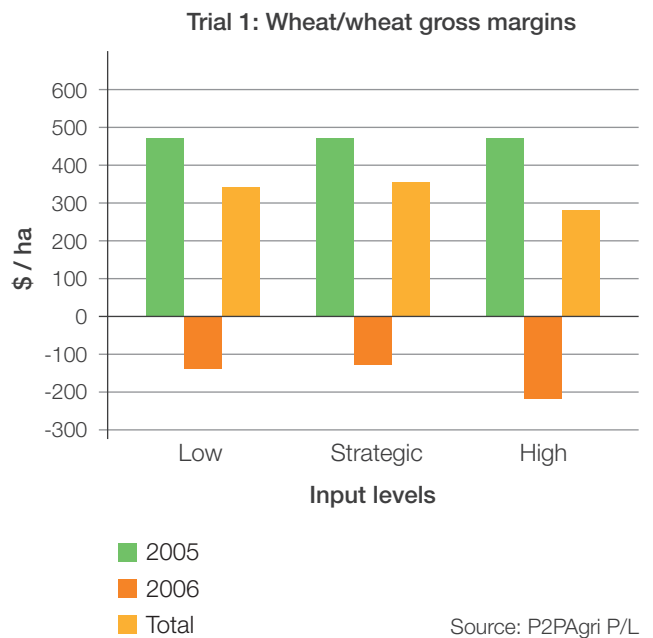
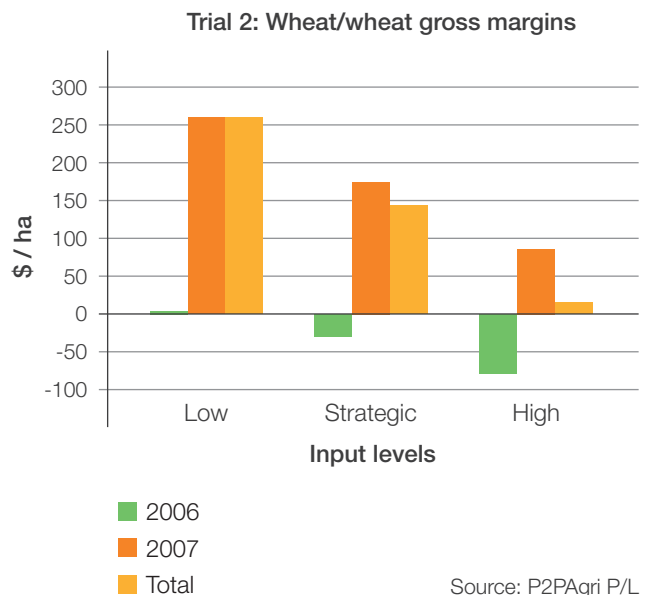


Figure 3.3: Trial gross margin results for the wheat/wheat rotation 2006 & 2007



The trial design had one 2-year phase conducted in 2005 and 2006, with the second 2-year phase in 2006 and 2007. The gross margin results of the wheat/wheat rotation are shown in Figures 3.2 and 3.3. In both phases of this trial, the best profits were not obtained by applying the maximum fertiliser level.

The main economic outcome from this trial was that in a poor season, it did not pay to apply high rates of fertiliser as it caused two problems for economic efficiency:

- i. It caused higher costs, and
- ii. Produced poorer yields, resulting in less gross income.

In every rotation tested, the high input treatment produced the poorest gross margin. How then, do you decide on the appropriate level of inputs?

B. Marginal cost and marginal return

The **marginal cost** is the additional cost of applying one additional unit of input to an activity, with all other inputs held constant. To use the previous example, if the fertiliser in question was nitrogen priced at \$600/t, and one 'unit' was 25kg/ha, the cost per unit of nitrogen is \$15.00/ha. So the marginal cost of an additional 25kg 'unit' of nitrogen is \$15.00.

Similarly, the **marginal return** is the additional income generated as a result of adding that extra unit of input. So if you are paid a farm gate price of \$200/t for wheat, each additional kg of grain earns us an extra 20 cents.

Table 3.1 illustrates this relationship. Each 25kg 'unit' of nitrogen costs \$15.00 and the first 'unit' of nitrogen results in an additional yield of 0.7t of wheat. At \$200/t, this produces a marginal return of \$140. Clearly the first unit of nitrogen is highly profitable - you will earn \$140 in gross income at an added cost of only \$15!

The calculation that maximum yield does not necessarily result in maximum profit becomes more useful in decision making when you consider risk. In the above example, the maximum yield of 3.7t/ha of wheat is achieved by applying 200kg/ha of

nitrogen. However, the maximum profit of \$535/ha is achieved by applying only 150kg/ha of nitrogen to produce a yield of 3.6t/ha of wheat. At this level of nitrogen use, the last 25 kg of N costs \$15 and added close to an extra \$15 to profit. All units of N up to this level added to total profit.

The application of 125kg/ha of nitrogen produces 3.5t/ha of wheat. The additional 25kg/ha of nitrogen to reach maximum achievable profit at 150kg/ha costs an extra \$15/ha. This adds \$20 extra revenue. Considering that this produces only a further \$20/ha in revenue, it may not be worth the added risk to achieve the resulting \$5/ha in additional profit.

In production economics, the theoretical maximum profit is achieved when:

$$\text{Marginal cost} = \text{Marginal return}$$

In Figure 3.1, this occurred at a nitrogen application rate of somewhere between 150-175kg/ha. Beyond this point, the cost of the additional unit of nitrogen is greater than the resulting income it generates. In theory, this is the level at which nitrogen should be applied in the above scenario if certainty prevailed. The reality however, of applying an additional \$15 of nitrogen to gain an additional \$20 of wheat, is for most farmers too risky to consider.

Uncertain factors in agriculture include weather, yield, disease and prices of both inputs and outputs. With effective marketing strategies, many farmers can know with some certainty the price they are likely to receive at harvest for some or all of their produce. Similarly, the costs of inputs such as nitrogen will be known precisely when such application is being considered, as will stored soil moisture and medium range weather forecasts. The actual yield is unknown, therefore decisions about levels of input use have to be tempered by knowledge of current soil moisture and how the season is shaping up.

Table 3.1: Sample marginal cost and marginal return

Nitrogen kg / ha	Marginal cost \$ / ha	Yield t / ha	Additional yield t / unit	Marginal return \$ / unit	Marginal profit \$ / unit	Profit \$ / ha
0	0	1.00	0.60	120.00	105.00	105.00
25	15	1.70	0.70	140.00	125.00	230.00
50	15	2.30	0.60	120.00	105.00	335.00
75	15	2.80	0.50	100.00	85.00	420.00
100	15	3.20	0.40	80.00	65.00	485.00
125	15	3.50	0.30	60.00	45.00	530.00
150	15	3.60	0.10	20.00	5.00	535.00
175	15	3.65	0.05	10.00	-5.00	530.00
200	15	3.70	0.05	10.00	-5.00	525.00
225	15	3.65	-0.05	-10.00	-25.00	500.00
250	15	3.60	-0.05	-10.00	-25.00	475.00
275	15	3.40	-0.20	-40.00	-55.00	420.00
300	15	3.10	-0.30	-60.00	-75.00	345.00

Source: Hudson Facilitation

C. Equi-marginal returns

So far we have only provided the simple application of nitrogen on wheat example to illustrate the theory of marginal costs and marginal returns when making farm management decisions. Farming is more complicated than this, and on most farms, there is a range of potential crops which would benefit from the addition of extra nitrogen. How do we decide where and when to apply it? Remember, **we are aiming to maximise profit, not yield.**

A production function such as that presented in Figure 3.1 exists for every crop which may be grown, not just wheat. In an environment of scarcity (limited resources), it is useful to estimate the production function of each enterprise which may benefit from additional units of nitrogen. Estimating the marginal costs and returns from the production functions of alternate enterprises will assist with decisions around whether to apply the next unit of input, such as nitrogen to wheat, canola or peas.

Once the marginal return per input of nitrogen for each crop is established, the next unit of nitrogen should then be applied to the crop which will achieve the highest marginal return for that additional input. While this looks obvious, have you ever calculated the numbers yourself? Many farmers continue to make these types of decisions based on instinct or past practices, but it is often helpful to test intuition with science and economic information.

D. Budgeting is critical

Appreciating the concepts of production functions and marginal returns supports decision making but, as with any partial analysis, care is needed to make sure all factors that could potentially change are considered. A decision to increase production from what may historically have been a 'normal' level of inputs to one which is higher in an attempt to increase profit, should create additional harvest income. However, it will also require significant additional working capital to implement, and raises the following questions:

- If you were to crop 1,000 ha of wheat and apply an extra 3 units of nitrogen (as per the example in Table 3.1), you would require an additional \$45,000 in working capital throughout the year. Do you have access to this much extra cash?
- Could the higher working capital requirements limit your ability to do other things?
- Are labour and equipment adequate to deal with the extra output?
- How might marketing strategies be affected?

Significant farm management decisions have implications for many parts of the whole system and require thorough budgeting to ascertain full working capital requirements and the likely profits from a range of seasonal outcomes, both good and poor.

E. Managing inputs with uncertainty

Risk, uncertainty and surprise are central features of running a farm. It is not possible to know what type of season you are experiencing until harvest is finished. For example, there are seasons when a crop has grown well, only to experience a frost at grain filling stage which then results in significant yield loss. This can be financially devastating, especially if a high input cost strategy has been adopted.

Advisers are often asked which management strategy is best: to be optimistic and plan for a Decile 7 season (good season) so that the opportunity can be maximised; or be conservative and manage for a Decile 3 season (poor season) and minimise losses. Either of these strategies, or mix of strategies, can be appropriate depending on the sequence of seasons experienced, the financial situation of the business and the attitude of the decision-maker to risk.

Recent research shows that farmers' decisions are often influenced by the experience of the most recent season(s): if it was good, the inclination is to feel more confident and think



What level of inputs will provide the most profitable outcome rather than the best yield?

Source: P2PAgri Pty Ltd

that the next season will also be good. Likewise after drought, farmers' management for the following season can often appear to be based on the assumption that it also will be poor. While some seasonal patterns can occur, such as a series of wet and dry years, there is little evidence that the seasonal outcome just past is closely related to the next years' conditions.

Risk Management Simulation Workshop

A risk management simulation workshop called 'Future Farming Business', developed by the University of Western Australia, provides some insight into the complex issue of managing inputs with uncertainty. This simulation workshop has been modelled on the farming conditions and expectations in the Great Southern area in WA, a cropping region with a relatively high growing seasonal rainfall.

This game is played over a number of seasons, using a computer program. Each player starts with the same farm and resources, and makes annual planning decisions with uncertainty, not unlike real farming. Decisions of enterprise mix, grain marketing and input levels are taken before the full understanding of the season is known.

The winners of the game are those that generate the highest net worth, which means the best sustained profits over the seasons played.

The most common strategies used by the winners are to adopt a conservative management style, which may imply placing emphasis on minimising exposure to losses is a sound starting strategy, depending on how the season begins. However, in practice, making the most of the occasional very good set of conditions, both prices and yields, is also critical to success over the medium term. Initially planning for a Decile 5 (average) season but having the capacity – financially and managerially – to be responsive to the season as it develops would be a sound strategy. If the season shows convincing signs of being above average, then increasing the inputs can be an option, and vice versa. The challenge to management is to have the capacity to respond to opportunities as the season unfolds.

For further information, contact Dr Amir Abadi: aabadi@iinet.net.au

Action points

- Develop a comprehensive set of management data, both physical and financial.
- Be guided by realistic medium term trends in yields and prices when planning each year.
- Practise using economic thinking in your decision making.
- Develop these skills yourself to validate/check professional advice.

3.2 MEASURING BUSINESS PERFORMANCE

3.2.1 Key management concepts

When managing any business, have the following concepts in mind:

- Liquidity (Cash)** – Cash flow management is to ensure more cash comes into the business than goes out, in the short-term and the medium term: Do you have enough cash to meet the day-to-day running of the business when annual costs vary from year to year?
- Efficiency (Profit)** – This addresses the issue of whether the farm business is getting a return on the capital being managed that makes the investment of capital and time worthwhile. Profit and return on capital managed is measured using a profit and loss budget and a balance sheet: Is the business making enough profit, after all expenses, to be sustainable?
- Wealth (Net worth)** - This measures how business wealth grows over the year by comparing net worth at the beginning of the year to net worth at the end of the year. If it has grown, then the year's activities have been successful: generating enough cash to pay all the bills, making enough profit to justify the investment, and building wealth which contributes toward achieving business goals. The wealth created through the year is generally a more important goal and measure of success than cash and profit.

Is your farm generating enough wealth to help you achieve your goals?

By measuring and managing with these concepts and goals in mind (see Figure 3.4), the farm owner will have criteria by which to judge situations and make decisions, both of a tactical (day to day) and strategic (medium term) nature.

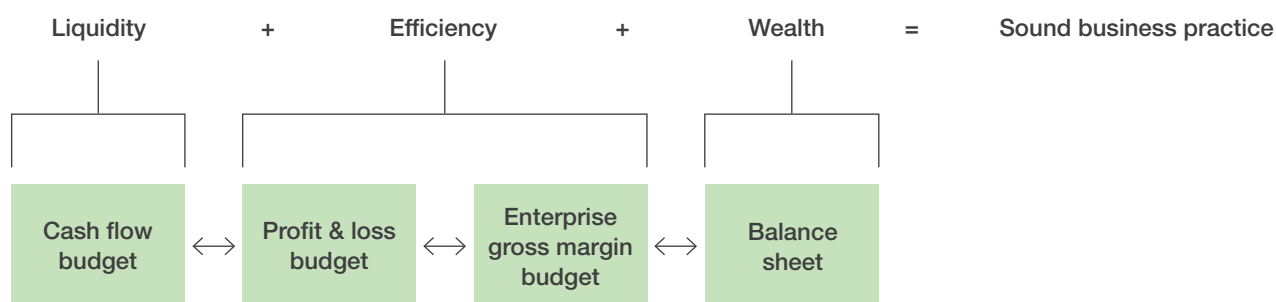
3.3 KEY BUSINESS 'TOOLS' AND INDICATORS

What farm business 'tools' do you need?

For a farming business to have a long-term future, it needs to be efficient and have an ability to grow. A business that does not grow over a period of 10 years will be going backwards, not standing still, and this can only be tracked properly by measuring the key indicators of the business health of a farm. But what are the tools that provide these indicators? Knowing the right financial tools to use to assess your business decisions will depend on your long-term business goals. Most farmers have one of two business goals – these goals, and the financial 'tools' to achieve them, are outlined in Table 3.2.

These tools, profit and loss, cash flow, balance sheets and gross margin budgets, can be used for both looking ahead and looking back. They are the fundamental business planning and recording tools for the farming business. They are valuable for planning and then useful when completed as 'actuals' at the end of the season, so that the business performance is monitored.

Figure 3.4: Key management concepts



Source: P2PAgri P/L

Table 3.2: Financial 'tools' to guide your farm business management

Farm Business Goal	Financial 'tools' needed to plan and track business health	What do these 'tools' indicate?
1. Continue to build the farming business and wealth for the business to be viable for the next generation.	• Profit and loss budget	Profit - the measure of profit gives the financial performance of the business.
	• Cash flow budget	Cash availability - measures whether the business can meet its obligations of loan repayments and interest and the required living standards of the owners.
	• Balance sheet	Net worth – growth indicates the business financial ability to manage risk. Return on capital - measures business efficiency. Equity – measures the percentage of assets owned.
	• Gross margins budget	Enterprise profitability - compares the relative contribution of farm enterprises to profitability.
2. Maintain and increase farm value as superannuation for the current generation operating the farm.	• Cash flow budget	Measures whether the business can meet its obligations of loan repayments and interest, and the required living standards of the owners.
	• Balance sheet	Measures the owner's wealth if the business is sold.

Source: P2PAgri P/L

If a business has a clear set of goals, then these budgeting tools can be used to assess how well the goals are being met. These tools provide key measures of business health, sustainability and wealth generation. Without knowledge of these tools, the owner or manager of the business is 'running blind' and it is more difficult to manage business risk and capitalise on opportunities. Without information from this set of budgets, business failure can come as a complete surprise, to the owner, if not the neighbours!

3.3.1 Profit and loss budget

Farm operating profit (also called Earnings Before Interest and Tax: EBIT) is a key business indicator and will vary significantly from season to season, as productivity is affected by seasonal growing conditions and commodity prices by market volatility. The operating profit achieved will depend on the size of the business and the cost structure.

Operating profit tells how well all the assets the manager controls are being used, i.e. economic efficiency. The indicator is return on capital managed - if this is low compared with what other similar farms achieve and compared with what other investments achieve, then a close look at the business is warranted (remembering returns to capital also come from owning the land as well as from farming it).

Expected profit improvement is the test to use when assessing any change proposed for the business. Figure 3.5 illustrates the measurement of 'net profit' and business growth.

3.3.2 Cash flow

The banker's truism that 'a positive cash flow is king' is well recognized by farmers: get the annual cash flow from the farming activities right and the profit and wealth creation follow.

Figure 3.5: Profit and loss

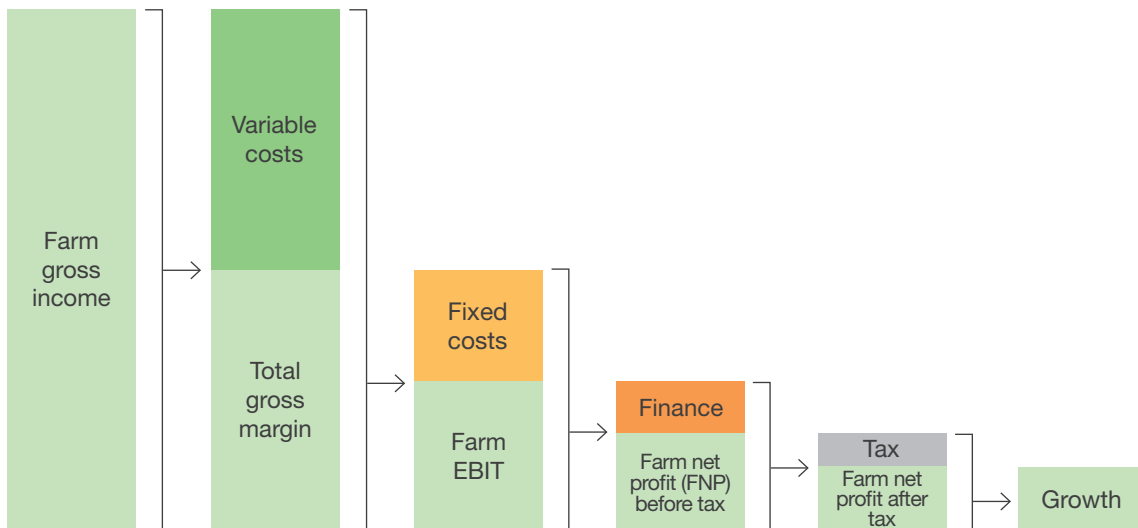


Figure 3.6: Cash flow

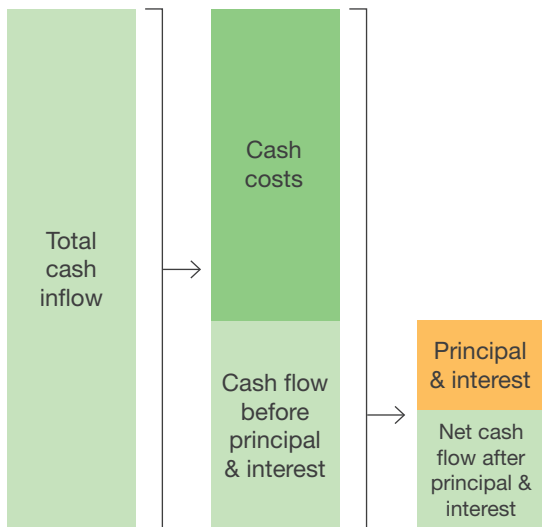
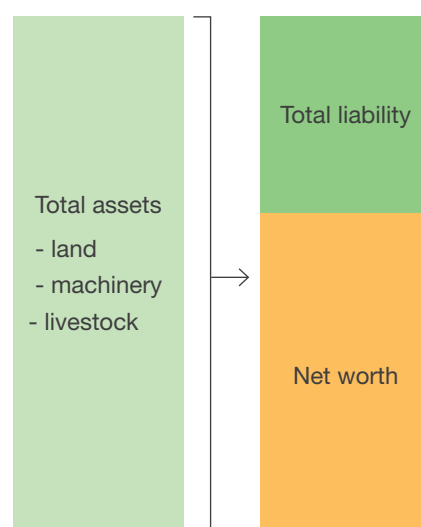
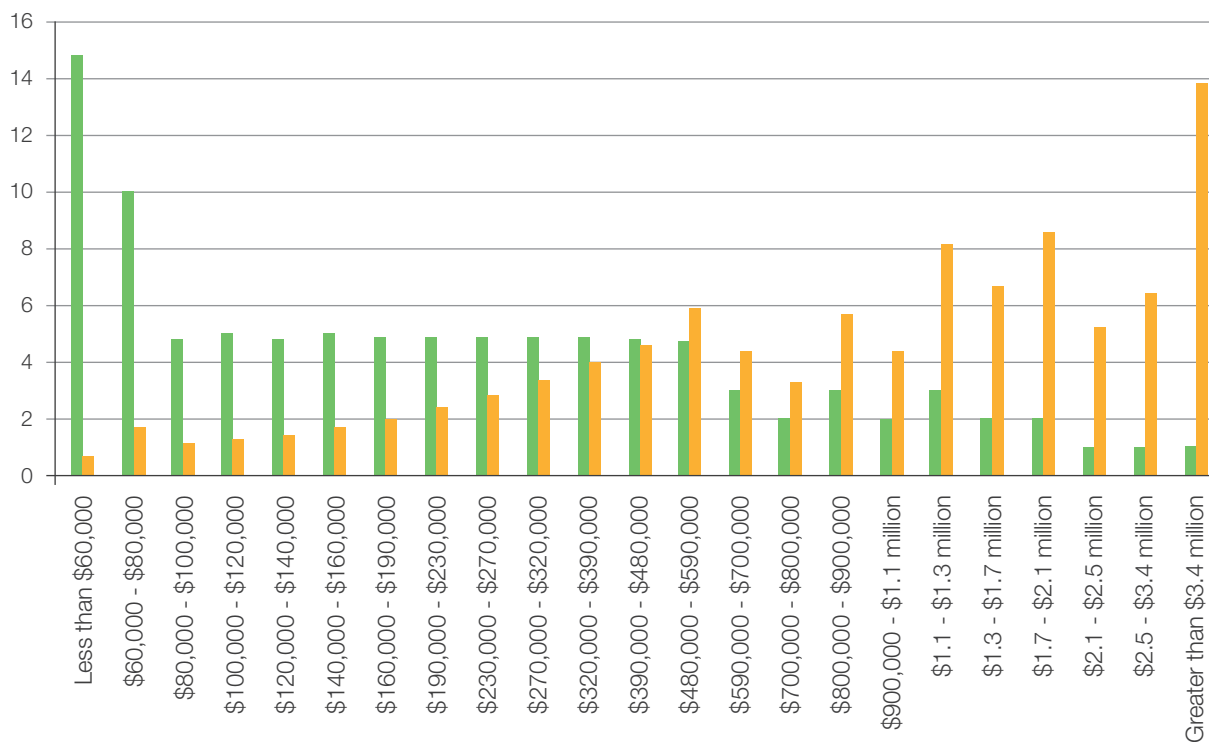


Figure 3.7: Balance sheet



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

Figure 3.8: Distribution of broad acre farm businesses by value of sales (total cash receipts) 2012-13



Note: AAGIS excludes farms with an estimated value of agricultural operations of less than \$40,000.

- Share of population
- Share of value of sales

Source: Australian Agricultural and Grazing Statistics Survey (AAGIS)

Most business failures occur because of an extended period of poor cash flow, resulting in the depletion of cash such as liquid assets and the ability to borrow additional capital. In general terms, **the more that cash coming into the business exceeds the amount of cash going out, the healthier the business.**

While this is a simple concept, the challenge is to continually monitor cash in and out, best done monthly with a 12-month budget of expected versus actual cash flows. A sound cash flow is needed to build reserves for more challenging seasons. It also informs the owners and bankers of the business's ability to meet its lending obligations, which is another key performance indicator. Figure 3.6 shows the elements of a cash flow.

3.3.3 Balance sheet

Some farmers question the use of a balance sheet as they do not plan to sell the farm. **A balance sheet provides the only measure of business success if monitored over a period of time.** Also, when borrowing capital from a bank, a balance sheet is essential for banks to assess the security you offer them in exchange for the loan.

Figure 3.7 shows the components of a balance sheet.

The key indicators from a balance sheet are:

- A. Net worth (also called equity):** The best single indicator of how a business is performing over time.

Net worth is the difference between total assets and total liabilities. In a sound business, this figure grows

over the years as a result of the farming activities. Net worth also changes as a result of changes in the values of assets, especially farm land. This is the real estate part of the business. It is good to measure net worth annually, on the same date each year, and monitor its growth, from the farming activity and from the change in land values. If it is not growing, then the business will be in danger of becoming non-viable in the long-term.

- B. Equity:** This measures the net worth as a percentage of the business' total assets and indicates the financial security of the business. It indicates how much of the business is owned by the farmer. It is an indicator of financial strength and capacity of the business to withstand times of low cash flow and profits due to market downturns and poor seasons. Dryland farmers usually run their business with equity levels above 70%. Generally, equity above 85% indicates farmers could consider expansion by land purchase, but equity below 85% generally needs

'We try to have two, three or maybe four years' budget planning going on and we've started benchmarking the budget so we can look at the business health of those future budgets.'

Tony Geddes,
'Yallock', Holbrook, Victoria

a period of consolidation to decrease debt levels.

- C. Return on capital:** If you are interested in measuring the efficiency of the business, then the best measure is return on capital managed (ROC).

It is calculated by dividing annual operating profit by the total assets managed by the farm. Greater than 6%-8% return on capital from farming (not owning) indicates an efficient farm business; the top 25% of farms in any year achieve this, as well as a further 2%-4% from capital gain in land. Combined, this gives returns to capital of 8-12% p.a., which is a very good comparison to other investments in the economy. On average, Australian dryland farmers earn around 2% - 3% return on capital p.a. from farming. This reflects that there is a small proportion of total dryland farmers who produce a large proportion of total production, and a large proportion of farms that produce a small proportion of total output, Figure 3.8.

3.3.4 Enterprise gross margins

Enterprise gross margins are used to **compare the relative contribution of each enterprise to a farm's profit, before overhead costs are considered.** An enterprise gross margin of a crop is the difference between the gross income (yield x prices) less the cash costs of growing a crop (also known as variable costs). As land is usually the most limiting resource on a farm, the gross margin is normally expressed as \$/ha. So, if a wheat gross margin is \$350/ha and barley is \$275/ha, then wheat is making a greater contribution to farm profit than the barley crop. The key to using gross margins is balancing the financial expectations with the agronomic requirements of the farming system. Some enterprises provide complementary benefits rather than just being competitive for land; for example, grain legumes provide nitrogen to the following season's cereal crop.

3.3.5 Other commonly used performance indicators

A. Benchmarks

Benchmarking is a farm management analytical method initially developed to compare farming businesses. However, **there are no two identical farming businesses, which makes meaningful direct comparisons difficult.** When using benchmarking data comparing businesses, at best they may raise questions of various parts of the farm performance, in a 'compare and contrast' sense. It is difficult to identify solutions for one farmer's situation and goals using benchmarks from another farmer's situation and goals. Farm problem solving and identification of opportunities can only be done on a whole farm case-by-case basis, using scenario analysis.

While technical benchmarks such as yield/ha and water use efficiency/tonne provide some useful technical information about what happens on similar types of farms, benchmarks are only reference points about parts of the operation of a farm business, not indicators of whole business performance.

Most business benchmarks are ratios and should be used to identify the issues a business needs to focus on; they cannot be used to provide solutions. Benchmarking assesses only parts of a business, whereas solutions require consideration of the whole business.

For example, issues that may be guided by benchmarking include:

- lambing percentage
- weaning rates
- water use efficiency
- machinery value / tonnes of grain produced
- various bank ratios

However, while these highlight specific components of the business, they do not provide the whole business picture.

A valid use of benchmarks is to measure key performance indicators of your own business against itself over time.

This helps to assess if your business activities are improving in the areas that are important to your goals.

B. Tax returns

Tax returns are legally required to be completed annually to assess how much tax, if any, the farm business is required to pay the Australian Taxation Office (ATO). As they are a legal document, banks appear to rely quite heavily on the information provided in the tax return. Note that **tax information does not provide business performance measures relevant to management decisions** as they are completed to ATO rules. Some of the values used for tax purposes are different to the figures that are relevant for management decision making. While tax accounts have a 'profit and loss' and a 'balance sheet', these do not use the same numbers as farm business management and so do not provide a true measure of business profit or a true record of the worth of business assets. Despite the irrelevance of tax accounts for management purposes, many Australian farmers use their tax return as their major measure of farm business performance, and thereby gain very little useful information about how well or poorly they are managing the assets they control.

A good accountant can help produce a set of farm business management budgets in addition to the tax budgets. This will provide an accurate measure of business performance and an accurate measure of equity. These would then provide a sound set of financial records that give information to understand and improve the management of the business.

➤ Key business 'tools' and financial indicators are discussed in greater depth in section 5.5, **Other performance indicators, Module 2.**

3.4 WHOLE FARM ANALYSIS

3.4.1 Business planning cycle

It is valuable each year to have a major planning phase that follows an accurate reporting of the previous season. Your tax return and cash flow reporting are not adequate to give all the information your business needs to be managed sustainably.

Regularly monitoring business performance by evaluating indicators of profit, cash flow, net worth, equity and return on capital is the only way of knowing whether failure is only days away, or whether there is capacity to expand and continually improve aspects of the business.

A feature of every well managed business is that they have a planning cycle comprising periods of goal setting followed by action and monitoring, with results feeding back into the re-setting of goals and targets. It can be an annual cycle (Figure 3.9), quarterly or monthly cycle, depending on the intensity of the business.

Farm business management requires focus on both part and whole business measurements in order to find business solutions and test business decisions. Your business feedback should come from a combination of the following farm business performance 'tools': Profit and Loss, Cash Flow, Balance Sheet and Enterprise Gross Margins.

'Budgeting is absolutely essential. We are very stringent on that. We have quarterly board meetings where we present budgets and go through our profit and loss, and budget actuals on the way through. We take our actual results from the previous 2 to 3 years and use those to sit down and plan for the future. In a business of our size and scale, it is really important to know when money is coming in and when it needs to go out.'

John Gladigau,
'Bulla Burra', Allawoona, SA

Figure 3.9: Farm business yearly planning cycle



Source: P2PAgri P/L

3.4.2 Bringing it all together: cash, profit and wealth

Co-contributor to this section: Assoc. Prof. Bill Malcolm, University of Melbourne.

'The key to farm business management is to assess the whole business and not just parts of the business. We can have a tendency to focus on each enterprise, one at a time. This may allow us to isolate problems and look for solutions. However, we should not lose sight of the whole business. This is called the 'whole farm approach.'

Assoc. Prof. Bill Malcolm,
University of Melbourne

This section brings the annual farm business management budgeting cycles together and shows how the balance sheet, profit and loss and cash flow interrelate to provide the broad picture of the farm business performance.

The farm family business has the following components:

- The people who own, manage and work in the business
- The technology used to guide production
- The economic environment
- The finance of the business
- The risk of business
- Issues beyond the farm gate

The challenge for farm management is that all these things need to be managed together. We need to find solutions to the whole problem. Solutions to parts are not solutions to the whole.

It is important to see how cash, profit and wealth are linked and how all three measures are needed to assess the performance of the business.

The following example, based on a mixed farm of 2,000 ha, demonstrates the relationship between cash, profit and wealth, and follows the Farm Business Yearly Planning Cycle in Figure 3.9.

Step 1: Calculate Opening Wealth

At the beginning or opening of the year, the farm's wealth (both **net worth** and **equity**) can be assessed using a Balance Sheet (Table 3.3), which measures both opening assets and liabilities.

In this example, there is only one debt to the bank of \$1m. This is a 10-year loan with an interest rate of 10%, so there is an annual principal repayment of \$100k.

This provides a 'bottom line' of opening values against which to measure the growth of business wealth across the year (Table 3.4).

Step 2: Calculate Annual Profitability

This is measured by a Profit and Loss budget.

$$\text{Gross income} - \text{Variable and Fixed Expenses} = \text{Operating Profit}$$

Table 3.5 shows the annual Profit and Loss for this sample farm. Gross Income from grain and livestock sales is \$1m. The Variable Costs are those cash costs that can be directly attributed to grain and livestock production. In this example, it is \$600k, which means the Total Gross Margin is \$400k. The overhead costs of \$200k are taken away from the total gross margin to get an Operating Profit of \$200k. This figure is also known as Earnings Before Interest and Tax (EBIT).

The growth in owner's equity is \$85k. This is a good result as it is positive, rather than negative. However, the true measure of success would be if this was compatible with the growth goal of the owners of the farming business.

Other business efficiency measures that can be calculated from the Profit and Loss budget are shown in Table 3.6.

Step 3: Calculate Annual Cash Surplus (Liquidity)

This is measured using an annual Cash Flow budget. It is important to note that the cash story is different to the profit story:

- A Profit and Loss budget takes into account hidden costs such as depreciation, and hidden income such as change in inventory of unsold production, whereas a Cash Flow budget only takes into account uses of cash and sources of cash.
- The Cash Flow in Table 3.7 shows a Gross (Cash) Income of \$1m, which in this example is the same as the Gross Income for the Profit and Loss. However, the overhead costs in the Cash Flow do not include the depreciation cost as this is not a cash item. In this example, the machinery value of \$1.0m is depreciated at 7.5% p.a., giving annual depreciation of \$75k. So the Cash Overhead Cost is \$125k (\$200k - \$75k).
- Annual Net Cash Flow includes any capital purchases that have been bought with cash. In this example, the farm bought \$75k of equipment, which shows up on the balance sheet as an additional asset.
- Annual Net Cash Flow also includes any principal repayments. In this example of a \$1m loan needing to be repaid over 10 years, the annual principal repayment is \$100k.

By subtracting the principal payment of \$100k, interest payment of \$100k and tax of \$15k, the annual Net Cash Flow of the business is negative \$15k. This loss is not a good outcome for the business as it needs to be funded from additional debt. (If this was a projected Cash Flow, provision would have to be made to finance this extra debt, or change the plan to ensure a surplus.)

Step 4: Calculate Closing Wealth

Check what has happened to the end of year Net Worth and Equity by putting the end of year Balance Sheet together, as shown in Table 3.8.

- Land value remains at \$4m, but machinery is now valued at \$925k as it has been depreciated by 7.5%, or \$75k.

Table 3.3: Sample farm's opening balance sheet

Assets		Liabilities	
Land value	\$4.0m	Bank debt	\$1.0m
Machinery value	\$1.0m		
Livestock value	\$0.5m		
Total assets	\$5.5m	Total liabilities	\$1.0m

Table 3.4: Opening values

Total assets – total liabilities	= Opening net worth
\$5.5m - \$1.0m	= \$4.5m
Net worth ÷ total assets	= Opening equity %
\$4.5m ÷ \$5.5m	= 82%

Table 3.5: Sample farm's profit and loss

Gross income (grain and livestock)	\$1.0m
Variable costs	- \$600k
Total gross margin	= \$400k
Overhead costs	- \$200k
Operating profit (EBIT)	= \$200k
Interest payments	- \$100k
Net profit	= \$100k
Tax	- \$15k
Growth of owners' equity	= \$85k

- The livestock value remains the same at \$0.5m and \$75k of new capital investment has been purchased out of cash flow. The total assets have remained unchanged at \$5.5m. Assets like land and livestock are periodically revalued but within-year changes are kept separate so as to not distort the measure of performance from the farming activities.
- The original bank loan has been reduced to \$900k by the \$100k principal reduction. However, new debt of \$15k has been incurred due to the negative annual cash flow of \$15k. Total liability has moved to \$915k.

The changes in net worth and equity for the year are shown in Table 3.9.

The growth in net worth of \$85,000 from the beginning of the year is the recorded net profit for the year (as no tax has been paid).

Table 3.6: Efficiency measures

Operating profit ÷ total assets managed	= Return on capital managed (ROC) %
\$200k ÷ \$5.5m	= 3.6%
Net profit ÷ equity	= Return on owners' equity (ROE) %
\$100k ÷ \$5.5m	= 1.8%

Table 3.7: Sample farm's cash flow

Gross (cash) income	= \$1m
Variable costs	- \$600k
Cash overhead costs	- \$125k
Capital expenditure	- \$75k
Net cash flow before loan payment and tax	= \$200k
Principal payments	- \$100k
Interest payments	- \$100k
Tax	- \$15k
Net cash flow	= - \$15k

Table 3.8: Closing balance sheet

Assets		Liabilities	
Land	\$4m	Bank loan	\$900k
Machinery	\$925k	New loan from the cash flow deficit	\$15k
Livestock	\$0.5m		
New Capital	\$75k		
Total assets	\$5.5m	Total liabilities	\$915k

Source: P2PAgri P/L

Table 3.9: Change to net worth and equity

Net worth		Equity	
Opening	= \$4.5m	Closing	= \$4.585m
Opening	= 82%	Closing	= 83.4%

Source: P2PAgri P/L

In summary, the results for this sample farm are:

- **Cash:** The annual net cash flow of -\$15k is not desirable, but equity is strong enough for the bank to advance this amount.
- **Profit:** Profit (growth in equity) is \$85k, which represents a return on capital managed of 3.6% - an average rather than good level of economic efficiency.
- **Wealth:** The Opening Net Worth was \$4.5m, which grew to \$4.585m at the end of the year. This is a positive movement in Net Worth, which is a good sign.

Note: No single one of these indicators tells enough about how the business is performing - all three measures are needed. It may not always be that all three indicators show the business is doing well. The profit can be sound but the cash position unsound, and vice versa. If all three indicators are showing poor results, it is a sign that the business needs to seriously assess the reasons why and look for strategies to turn the situation around.

3.4.3 Bringing strategic thinking to management

A. Risk

Risk refers to the fluctuations of seasons, prices and other variables that directly affect the profit, cash and wealth of the business. Australian farmers face more risk than any other farmers in the developed world.

Risks in Australian agriculture:

- Minimal government assistance compared with farmers in most developed countries.
- Significant climate variability, particularly evident in the last 10 – 15 years.
- Direct exposure to international commodity markets, interest rate movements and exchange rates.

Risks to individual farm businesses:

- **Business risks** – The uncertainty of prices, seasonal drought and disease outbreaks.
- **Institutional risks** – These are issues beyond the farm's control and include government policies, market changes, international events and exchange rates.
- **Financial risks** – You have some control as you decide whether to take on added debt.

Attitude to risk:

Managing these types of risk is the key to success in Australian farming. With these significant risks, it is easy to have a defensive view and avoid risk. However, it should be recognised that it is risk that creates the return. Economists would say that business profits are a reward for the risk taken by the business. Your risk preferences are important, but remember that if you want a low business risk life, then you will have a low business return.

➤ **Risk management** is covered in greater detail in section 7, Module 3.

Having an offensive (positive, opportunistic) view of risk allows you to manage opportunities as they occur.

B. Scenario analysis

Imagining the future is powerful when you are developing the business vision. It is helpful to model the farming business given different events, such as poor prices and poor seasons, using 'scenario analysis'. Management of the debt levels can be assessed by these scenarios.

This is a really useful tool to assess the risk profile of the business and assess different strategies for the business to withstand whatever risks it needs to face. **The key is prepare, not predict.** We cannot predict the future, but we can prepare for events that are likely to occur, such as drought and market downturns.

The key to success in farming is to be flexible and to adopt new technology to keep you profitable. **In farming, if you are standing still, you are going backwards!**

➤ **Analytical tools** are covered in greater detail in section 11, Module 3.

C. The relationship between debt and equity

One key to the success or failure of a business is the relationship of debt to equity. The principle of '**increasing financial risk**' has a dynamic effect on business performance, as illustrated by the following example:

Example of Increasing Financial Risk

A farm with \$10m in assets and \$5m in debt has equity of \$5m. If this farm earns 10% ROC, that's a profit of \$1m. The interest bill for that farm at 8% interest on \$5m debt is \$400k. This leaves a Net Profit of \$600k. The change in equity for this farm is \$600k, which is a growth in equity of 12% (\$600k/\$5m). This is a good result.

+10% ROC → 12% growth in equity

Consider what happens when the opposite occurs when there is an Operating Loss of 10%. This farm loses \$1m. In this situation, the interest bill is still \$400k, but the Net Profit for the year is -\$1.4m. This gives the business a 28% drop in equity (-\$1.4m/\$5m), which is a very poor result.

-10% Loss → -28% decline in equity

This example highlights that when things go well, the business moves forward at a certain rate. However, **when things go badly, the decline is much more rapid.**

A snowball effect also occurs when things go bad as the asset value declines. This makes the equity decline even further and increases the gearing ratio, further exposing the business. The business will now be seen to be a higher risk, resulting in higher interest rates from the bank. All these elements create a snow-balling effect where the equity in the business is quickly eroded.

The key point of the principle of '**increasing financial risk**' is that too much debt will expose the business and it will not survive. However, keep in mind that too little debt will mean you may not grow fast enough compared to your competitors. This will again expose the business to higher risk. The key is to have the right amount of debt.

➤ For more information on **HOW** to measure your farm business performance, go to section 5, **How do i measure the financial performance of my farm business? Module 2.**

Characteristics of a good farm manager:

- The farmer who is **passionate** about their business. They love what they do, and this helps with resilience and getting the business through the hard times.
- The farmer **who wants to be the best** at what they do. This striving for excellence gets them focused on continual improvement.
- The farmer **who knows his business well and what makes the business money.**

Put these three characteristics together, and you have a successful farm manager!

Action points

Use these farm business management budgets to:

- Develop your farm business budgets at the beginning of each season.
- Record your actual farm performance.
- Evaluate your business results at the end of each season.
- Measure your business' financial performance each year.

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Malcolm, B, Makeham, J and Wright, V (2005), **The Farming Game: Agricultural Management and Marketing**, Cambridge University Press, Melbourne.

GRDC RESOURCES

Other information relating to the topics covered in Module 1 can be found in the following GRDC Fact Sheets:

Are you a good labour manager? (ORM, 2013):

<http://www.grdc.com.au/GRDC-FS-GoodLabourManager>

Building emotional resilience (ORM, 2013):

<http://www.grdc.com.au/GRDC-FS-EmotionalResilience>

Farm business overview:

<http://www.grdc.com.au/GRDC-FS-FarmBusinessOverview>

Farm business risk profiles (ORM, 2013):

<http://www.grdc.com.au/GRDC-FS-FarmBusinessRiskProfiles>

Making effective decisions (ORM, 2013):

<http://www.grdc.com.au/GRDC-FS-MakingEffectiveBusinessDecisions>

Managing People in the Farm Business – Being an Effective Leader (ORM, 2014):

<http://www.grdc.com.au/GRDC-FS-ManagingPeople>

Production economics:

<http://www.grdc.com.au/FBM-ProductionEconomics>

Simple and effective business planning:

<http://www.grdc.com.au/FBM-SimpleEffectivePlanning>

Taking care of your personal health (ORM, 2014):

<http://www.grdc.com.au/GRDC-FS-PersonalHealth>

Your farm business management checklist:

www.grdc.com.au/FBM-Checklist