

# DAIRY FARM BUSINESS ANALYSIS

Information for dairy farmers about analysing your business  
and understanding DairyBase reports.



# ABOUT THESE FACT SHEETS

## Purpose

These fact sheets provide information about analysing a dairy farm business using DairyBase, and assist in understanding the terminology used in the reports generated.

To access the DairyBase analysis tool go to [dairybase.com.au](http://dairybase.com.au).

## Acknowledgements

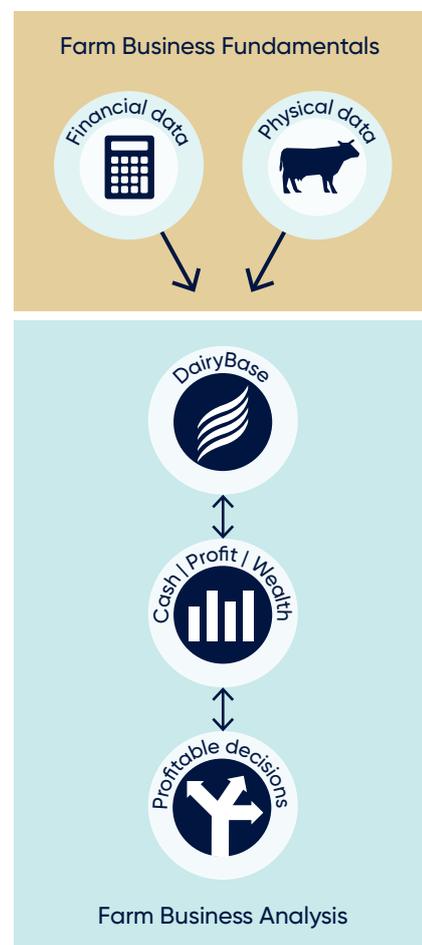
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## Disclaimer

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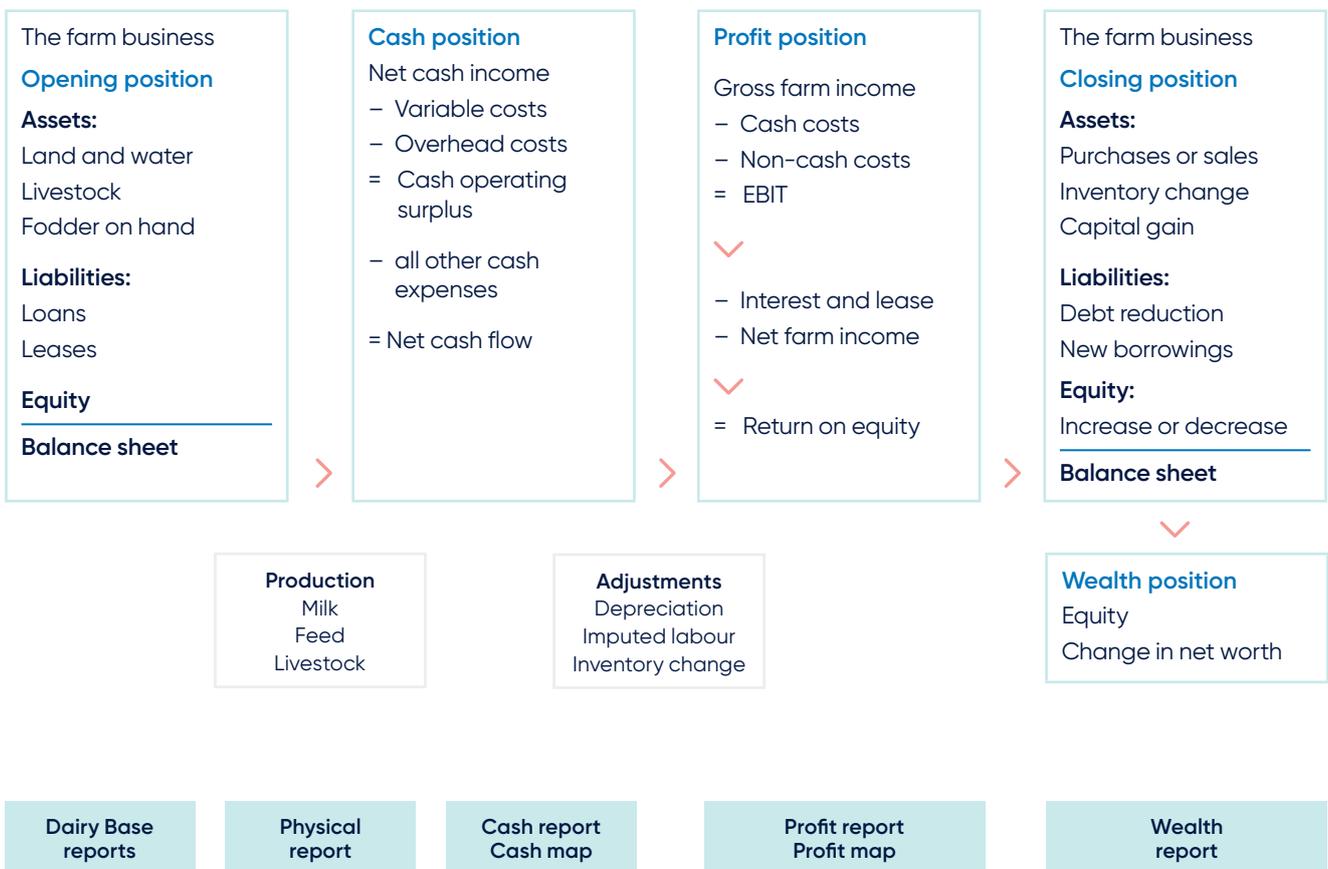
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# ANNUAL BUSINESS ANALYSIS

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# GROUP A

WHOLE-FARM FACT SHEETS





## OVERVIEW

### PRINCIPLES AND CONCEPTS

#### Why analyse your business?

Dairy businesses operate in a volatile and complex environment. Running a farm is rarely plain sailing, and we know each year will be different. Sound farm business decisions rely on evaluating a wide range of financial and physical information to understand all the facts and the impacts that different seasons and decisions have on your business.

Business analysis usually starts with a review of past performance, looking back at what happened last year. From there you can determine the strengths and weaknesses of the business, and the opportunities and threats for the year ahead. You can then use this information to plan what needs to be done to meet the challenges, and work towards achieving business and personal goals.

#### What is DairyBase?

DairyBase is a web-based tool supporting dairy farmers and their advisors to monitor farm business performance.

You can use DairyBase to take your farm's physical and financial data and produce reports detailing your business' physical, cash, profit, and wealth position.

DairyBase helps you to compare your own farm business over time; identify opportunities to increase profit and manage risk; and to compare your farm to others, according to farm size, region and production system.

See [dairybase.com.au](http://dairybase.com.au) to access the tool.

#### Preparing for business analysis

Before you start a DairyBase business analysis, it is important to have all the right information. Taking time to gather all the information and be accurate with how it is entered will mean the reports generated will be more reliable and useful.

A well organised system to manage the financial transactions and legal obligations is an essential part of dairy farm management and makes business analysis easier.

Some tools to assist in organising farm data include:

- **Dairy Australia Standard Chart of Accounts**  
Helps organise farm accounts into a logical and consistent format, for use in both accounting and tax compliance, and DairyBase analysis.
- **Livestock and Feed Inventories**  
Help to keep track of livestock and feed numbers.
- **Information Checklist** Fact sheet  
A2 outlines the information you require for DairyBase.

#### The whole-farm approach

Understanding the performance of a dairy farm business involves a 'whole-farm approach', which considers the goals of the farm owners, the resources they have to work with and a detailed understanding of the farm's physical performance, financial performance and risk profile.

The starting point to the whole-farm approach is recognising that each farm business is unique.

- The people running them have their own set of hopes, goals, skills, views of risk, stage of life and family situation.
- The physical resources of a farm business are different for every farm.
- Potential income, costs and debt structure of each farm business are different.
- Each farm has a unique history, which has shaped the present situation of the business, and influences the opportunities and directions for the future.



## The matching principle

Dairy business analysis examines in detail the production of milk, fodder and livestock for a set period, commonly the financial year. So, all the income and expenses must relate to that production only to ensure that the reported profit fairly reflects performance. Accounts need to be adjusted at the start and end of the year to ensure they match the milk production.

There are two methods of recording financial transactions: cash accounting and accrual accounting.

- 1 **Cash accounting** is where the income and expenses are recorded in the month when they are actually received and paid. This is the most common method and typically used for tax reporting. Cash accounting records will need to be adjusted according to the matching principle before being used for DairyBase.
- 2 **Accrual accounting** is when the income and expenses are recorded in the month when they occur, even if the payment or invoice for the goods or service is yet to be received. This is a more complicated method, but is necessary for DairyBase business analysis, to **match** the **income** earned from milk production directly to the expenses incurred to produce that milk **in that year**.

## Management accounts are different to financial statements from accountants

The reports that are generated from DairyBase are designed to be used to make sound decisions about farm management. They will be different to the Financial Statements and Tax Returns that are generated by an accountant. Setting up your record-keeping system using the Standard Chart of Accounts should allow for single entry of data, and multiple uses for both management and accounting.

When preparing management accounts it is important to remember to apply the 'matching principle' i.e. make sure that only the income and expenditure that applies to the year in question is included. For example if we are analysing the 2015–16 financial year there might be fertiliser that was used in 2015–16 but paid for in 2014–15 for taxation purposes. Conversely, there may be fertiliser that has been paid for in 2015–16 and used in 2016–17. When creating management accounts for 2015–16, in both cases only the expenditure on fertiliser that was used in a 2015–16 should be included in the 2015–16 end-of-year analysis. Another common adjustment when converting from taxation accounts to management account is for issues where capital expenditure maybe recorded as 'repairs and maintenance' for taxation purposes but it is actually a capital expense, as opposed to an operating expense for the year in question.

Your accountant should be encouraged to adopt the same chart of accounts.

## Why so many numbers?

Business analysis generates a lot of reports and looks at the business from a number of angles. Reports will provide results in dollars, but also in relation to the production (\$/kg milk solids or cents/litre) and to the key assets (\$/ha or \$/cow).

It can be daunting to make sense of all the reports and to know how to use the various performance measures. Set up a time to review the results with all key people in the business and trusted advisors.

## Fact sheets series

The fact sheets explain the nuts and bolts of business analysis, and the main terms and concepts found in the DairyBase reports.

## THE INFORMATION CHECKLIST

### Land

- Land areas in hectares. Classified as owned or leased and then further detailed into usable, unusable, milking, support, irrigated and dryland.

### Livestock

- Opening and closing livestock numbers and \$ values for all age groups.
- Number of cows (including first calvers) milked for a period of at least three months.
- Grazing records to calculate the time spent by each class of livestock on the milking area, support area or agistment area.

### Milk production

- Milk production (volume and composition) supplied to your milk company for the financial year.

### Feed

- Opening and closing feed on-hand of all feed types.
- Tonnes of conserved fodder made on the milking area and on the support area.
- Tonnes of grain harvested on the milking area and on the support area.
- Tonnes of purchased fodder and grain and purchase price (landed on farm).
- Detail of where feed was fed out – on the milking area and support areas.

### Rainfall and irrigation

- Annual average rainfall for your farm (or the measured rainfall for the year).
- Megalitres of water applied as irrigation.

### Labour

- Number of paid full-time and part-time staff, and the hours worked.
- Number of unpaid staff (family/sharefarmer) and the hours worked.

### Fertiliser (optional in DairyBase)

- Quantities and type of fertiliser used, including the quantity applied to the milking area.

### Financial data – all GST exclusive

- Financial statements, including profit and loss (income and expenses).
- Balance sheet (assets and liabilities).
- Livestock trading account (opening and closing livestock plus sales and purchases).
- Annual milk income statement, or end-of-year milk statement from your milk processor (including step-ups and bonus payments for the production year).
- An estimate of the market value of your farm assets, including land, water, vehicles and plant and equipment, including leases.
- A list of all debt, including leases, and the repayment schedules.

## CASH

A key component of farm business performance is that of cash.

The cash position of a business shows if we are generating sufficient income to pay the bills, service debt, make capital and principal payments, and cover tax and personal drawings.

The cash position does not include non-cash changes that contribute to profit, so when it comes to farm performance it does not tell us if the business is profitable. For example, one of the key differences between a cash analysis and a profit analysis of a dairy business is that a cash analysis would not include adjustments for changes in fodder reserves or changes to the number of livestock owned by the business. Changes to both feed and livestock inventory would be included in a profit analysis. For more detail refer to fact sheet A4.

A cash view of the business is important as we assess year-to-year changes in milk price and feed prices, as well as changes to the farm business, such as increases in debt and capital, and principal repayments.

**Two valuable cash tools include an annual cash report and a cashflow budget**



## 1 Annual cash report

A DairyBase cash report shows the actual financial transactions that have occurred, including all income and expenses, loan repayments, capital purchases and sales and personal costs.

Some of the key terms include:

- Total farm cash income**  
Shows the cash income into the business from net milk sales, net livestock sales minus livestock purchases, fodder sales, temporary water sales and other farm cash income.
- Total farm working expenses**  
The variable and cash overhead costs incurred in operating the business. It is often expressed relative to the amount of litres or milk solids produced, as \$ per kg Milk Solids or cents/litre.
- Farm operating cash surplus**  
The cash income less cash variable and cash overhead costs, before any finance or personal costs have been paid. This is the surplus cash available to pay interest or principal on loans, tax, personal drawings and any capital expenditure.
- Net cash flow (before tax and drawings)**  
A measure of all the cash income minus all the cash expenses of the business, including interest, lease, principal and capital investment. It is what is left for the owner to pay tax and personal drawings. It is used to determine if the business has enough cash available to meet all of its financial commitments.

## 2 Cashflow budget

A cashflow budget is a plan to estimate the income and expenses into and out of the business over a given time, usually for the year ahead. It can be updated quarterly or monthly with the actual amounts earned and spent and used to monitor the cash position.

Cash flow can be positive or negative, depending on whether there is more money coming into the business than going out. Periods of negative cash flow are common in farming businesses, as income and expenses vary from month to month. Overdraft facilities from banks are commonly used to manage the ups and downs of cash flow. Monthly cashflow budgets are often required by banks to assess the level of overdraft that is needed for the client to meet their ongoing business expenses.

**More detail on Income and Expenses can be found in the Financial fact sheets.**

## PROFIT

Profit is the key measure of business efficiency and shows how well the farm assets are used to provide a return to the owner.

The term 'profit' is used to describe a range of different measures and profit can mean different things to different people in the business:

- To a tax accountant, the term 'profit', as in profit and loss, is about taxable income.
- To a farmer, 'profit' can mean disposable income or available cash.

### DairyBase

Measuring a farm's true profit cannot be completed directly from tax accounts or from a cash report. It requires a whole-farm analysis, including the income and expenses of the business and the opening and closing financial and physical position. Measuring the profit of a farm business involves capturing cash and non-cash income and cash and non-cash expenses.

When we analyse profit we ensure all income and expenses relate to the financial year in question, by using the matching principle and accrual accounting. Separate out income and expenses not related to that year's production. For example, final step-up milk payments received in August should be counted in the previous year's income; and feed bills that are received after the end of June but relate to the previous season.

### DairyBase profit report: Key terms and concepts

#### Gross farm income

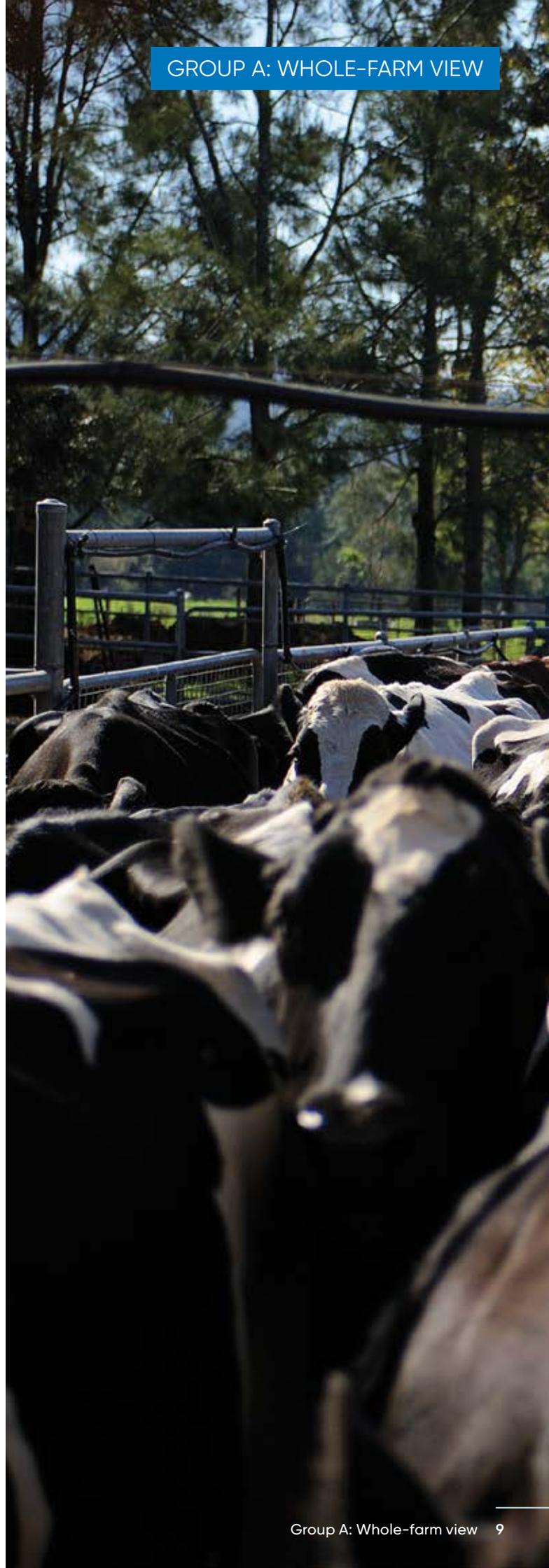
Includes cash income from sales of milk, livestock, feed, other farm income and also non-cash income from a change in livestock numbers. See fact sheet C1.

#### Total operating costs

Includes variable costs, cash overhead costs and non-cash overhead costs from depreciation and imputed labour, plus an adjustment for changes to feed and water inventory changes. See fact sheets C2 and C3.

#### Earnings before interest and tax

(EBIT) This is gross farm income less total operating costs. It shows the profit available to fund interest, leases, principal reductions, capital improvements and growth in the business owner's wealth. EBIT is commonly referred to as 'operating profit' as it reflects the profit from operating the business. See fact sheet C5.



## Cost of production (COP)

Including inventory changes – this is the total operating costs of the business plus the feed and livestock inventory changes and livestock purchases. This is the average cost of producing the main product of the business; milk, and the two by-products of livestock and feed. This is not the marginal cost of production. The marginal cost of production is the amount it would cost to produce the next kgMS or litre of milk as opposed to the average cost of production across the whole business.

## Net farm income

The profit remaining after the cost of interest on borrowed funds and lease costs have been deducted.

## Return on total assets (ROTA)

A key profit measure that describes how well the farm business has used its owned and leased assets to generate a profit. It is used to compare between years and between different farming businesses because it considers business performance before the impact of debt and lease costs, which will be different for each farm business. It also takes into consideration the differing asset values based on factors such as region and climate, and enables farmers to make comparisons of profitability across regions.

## Return on equity (ROE)

A measure of the owner's rate of return on their own investment in the business. The aim here is also to have a return on equity above your return on assets. This means the business is growing and providing opportunities to increase the owner's wealth. See fact sheet C7.

## Profit and changes to capital value

When analysing business performance we consider profit both with and without changes to capital value. Values for land and water in particular usually increase over time, and this change is captured in the wealth report, which shows the value of assets and liabilities.

- ROTA without changes in capital value helps us see the business operating performance, without the influence of capital changes.
- ROTA with changes in capital value shows the complete view of business performance. At different times changes to capital value can be negative as well as positive.

DairyBase shows only ROTA without capital growth.

The DairyBase profit map shows the components and logical format agreed on by industry, using standard terms.

## WEALTH

Wealth is the net value of all the assets of a business at a point in time. It is the total value of the business that the owners own, also known as equity, net worth, or owner's capital.

The goal for most business owners is to increase wealth or net worth over time. There are two ways to do this: by operating the farm business to generate a profit; and by growing the value of the assets owned. This growth may come from those existing assets becoming more valuable over time, and from accumulating more assets, such as buying more land.

Wealth is calculated by comparing the value of all assets owned against liabilities (debts owed) at a given time. The difference is known as equity or net worth.

The wealth report from DairyBase presents your information in a logical format that has been agreed on by industry and uses standard terms and structure. It shows the average value of assets and liabilities over the year, both owned and leased, at current market value. This report is also commonly known as a balance sheet, although it differs from a tax-based balance sheet, which is based on depreciated asset values.

Creating an accurate balance sheet is an essential step in a business analysis. The values are utilised to generate your return on total assets and return on equity.

For more detail on assets, liabilities and equity, see fact sheet C7.

It is important to highlight that a balance sheet and depreciation schedule, as provided by an accountant for tax purposes, will be different to the DairyBase wealth report, which is a market value balance sheet, as several key asset values in a tax analysis generally do not reflect market value.



## DairyBase wealth report: Key terms and concepts

### Return on total assets (ROTA)

A key profit measure which describes how well the farm business has used its owned and leased assets to generate a profit. It is used to compare between years and between different farming businesses because it considers business performance before the impact of debt and lease costs, which will be different for each farm business. It also takes into consideration the differing asset values based on factors such as region and climate and enables farmers to make comparisons of profitability across regions.

### Return on Equity (ROE)

A measure of the owner's rate of return on their own investment in the business. The aim here is also to have a return on equity above your return on assets, this means the business is growing and providing opportunity to increase the owner's wealth. See Fact sheet C7.

## Profit and changes to capital value

When analysing business performance we consider profit both with and without changes to capital value. Values for land and water in particular usually increase over time, and this change is captured in the Wealth Report which shows the value of assets and liabilities.

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- ROTA with changes in capital value shows the complete view of business performance. At different times changes to capital value can be negative as well as positive.

DairyBase shows only ROTA without capital growth.

# GROUP B

## PHYSICAL PARAMETERS FACT SHEETS



## FARM AREA

Land is an important and valuable asset for a dairy farm business. This fact sheet explains how farm areas are described in DairyBase. This then helps determine how efficiently land resources are used, from both a financial and a physical perspective.

### Key terms and concepts

#### Land value

How much land is owned and leased by the dairy business, and what is it worth at current reasonable market value? This is important for working out asset values and is used in the wealth and profit reports.

#### Land use

How efficiently is the farm used for production of milk, growing feed and rearing livestock? The DairyBase physical report provides a number of measures to assess performance on a per hectare basis, including stocking rate, pasture harvested, milk solids production, water and fertiliser use. This assessment can be done based on the milking area alone or the total usable area of the business, which includes milking and support area.

**Farm area** is described in the following ways, with hectares as the standard measure:

#### Milking area

The standard definition for milking area is the area where the milking cows consistently graze over the year. This is used to calculate pasture consumed per hectare. Areas that may only be grazed once or twice in the year are generally not included. Areas taken out of the grazing rotation for short periods for sowing or renovation are included.

Areas of the farm used to grow fodder crops that are not grazed, but are conserved as hay or silage and fed back to milkers at a later date, are not included as milking area. This area is included as part of the support area and the fodder is considered as brought in feed.

If this area is then planted to pasture and is grazed for part of the year, then a proportion of the area should be included as milking area.

#### Support area

It is important to estimate the amount of feed grown on the other parts of the farm that are not included as milking area. This includes fodder crops grown and fed back on the milking area, plus feed consumed by replacements and dry stock.

#### Irrigated area

Knowing how much of the farm area is irrigated allows you to calculate some water use efficiency measures, such as megalitres of water used per hectare, and dry matter produced per megalitre.



## LIVESTOCK

Dairy livestock generate most of the products sold. It is important to know how well they are performing and what their value is to the business.

The DairyBase reports show many of the performance measures on a per cow basis to give an indication of performance as measured against the main production unit on the farm – the cow.

A **livestock inventory** is the best way to keep track of stock numbers across the year, including births, deaths, sales and purchases. This is also known as a livestock reconciliation.

Livestock are an asset and need to be valued. Putting a dollar value on each class of livestock is required for the wealth and profit reports in DairyBase.

Fact sheet B3 explains how to complete a livestock inventory.

### Key measures and concepts

#### Number of cows milked

How many cows contributed to the total volume of milk produced in the year? This sounds like an easy number to work out, but it can be confusing as cows move in and out of the milking herd for various reasons.

The definition used in DairyBase is: the number of cows, including first calvers that have been milked in the herd for at least 3 months of the year.

#### Stocking rate on the milking area

This is calculated by dividing the number of cows milked by the size of the milking area.

So if a farm has milked 250 cows for at least three months on a milking area of 85 ha, the stocking rate would be:  $SR = 250 \div 85$ , which is 2.9 cows/ha.

Stocking rate describes how intensively the farm is being managed, which is important in pasture-based farming. It is influenced by the resources available and by the management approach of the farmer.

Stocking rate is a less relevant measure for those farms that import a lot of feed, such as partial or full mixed ration farms.



### Stocking rate on the usable area

This is calculated by dividing the number of cows milked by the size of the farm usable area (both the milking area and the support area).

It shows how intensively the whole farm usable area is stocked with milkers.

### Cow liveweight

This is the average liveweight of the milking herd across the year.

Milking cows will gain and lose weight across the lactation cycle, so determining an average liveweight for the herd can be difficult.

If you have scales you can weigh some cows at different stages of lactation and determine an average weight. You can also use the average weight of cull cows across the year as an indication of typical liveweight. Cull cows will often be heavier than the herd average; where this is the case an appropriate adjustment will need to be made.

### Cow liveweight per hectare on the milking area

This is calculated by taking the stocking rate on the milking area and multiplying by the average liveweight of milkers.

So if the stocking rate on the milking area is 2.9 cows/ha, and the average cow liveweight for the herd is 580 kg, then  $LWT/ha = 2.9 \times 580$ , which is 1682 kg/ha.

This is a more accurate measure of stocking rate, as it accounts for different sized cows.

### Livestock movements during the year

In addition to recording the opening and closing numbers for each livestock class you also need to know the average number farmed for the year. With the young stock the opening and closing numbers might differ and DairyBase utilises the average number to calculate the energy requirements of each livestock class and therefore the grazed feed. You also need to keep records on where each livestock grazed throughout the year, so how much time they spent on the milking area, the support area or on agistment.

### Grey areas

**Leased cows** are included in the average stock numbers, the stocking rate and the liveweight estimations. Their financial value also needs to be calculated, as they will be listed as a leased asset in the financial analysis. They are not included in the livestock trading calculation in the profit report.

**Non-dairy stock** In a dairy business analysis it is best to exclude any beef cattle and treat them as a separate enterprise.

## LIVESTOCK INVENTORY

A livestock inventory is a record of all livestock that are part of the dairy business over the financial year. It is also called a livestock reconciliation.

There are several reasons to create livestock inventory:

- To keep track of livestock numbers across the year, including births, deaths, sales and purchases of all categories of stock.
- To value all livestock at the start and end of the year. The value of livestock is listed as an asset on the balance sheet.
- To determine the change in value of the livestock over the year, as this contributes to gross income in the profit calculations.
- For calculating feed consumption for the year.

### Livestock numbers

The stock reconciliation is a difficult component of a business analysis to get right. Animals move from one category to another over the year, as calves are born and stock are sold or purchased.

It requires good records to be completed properly, including:

- a head count at the start of the year (1 July) and at the end of the year (30 June)
- calving records with numbers of calves born each month
- sale and purchase records for all stock categories
- deaths for all stock categories.

Common stock categories for an inventory include:

- milking herd (including dry cows)
- rising two year-old heifers
- rising one year-old heifers
- calves up to weaning age
- mature bulls
- young bulls
- When completed, the numbers will balance up for each category and the total. That is:

$$(\text{Opening stock numbers} + \text{Purchases} + \text{Births}) = (\text{Deaths} + \text{Sales} + \text{Closing stock numbers})$$



## Livestock values

Livestock are an asset and need to be valued at the start and at the end of the year, and this value is used in the wealth and profit reports. Cattle prices will go up and down, so it is best to use a value that reflects realistic market values over a longer term average. DairyBase uses default livestock values based on industry averages, unless specific values are entered.

## Livestock trading profit or (loss)

Livestock trading profit is an estimate of the annual contribution to gross farm income of the changes in the number and value of livestock during the year. It is included in the profit report to establish the true income and costs to the business. Note: the cash report only includes the cash sales minus purchases, net of selling or buying costs.

## How is it calculated?

It is calculated as the trading income from sales minus stock purchases, plus changes in the value and number of livestock on hand at the start of the year and at the end of the year, accounting for the number of births and deaths.

### Livestock trading profit \$

= Value of sales

– value of purchases

+ closing value of livestock – opening value of livestock

## Why is it important?

An increase in livestock trading profit indicates that there was an increase of livestock value and/or an increase in livestock numbers over the year or that the sales revenue received was greater than the value at which the animals were originally valued.

In a business analysis, each class of stock is usually valued at the same amount at the end of the year as the start of the year. This is to isolate operating performance of the business from changes to capital values. So an increase or decrease in livestock value should reflect a change in the number of stock, not whether that class of stock has changed value over the year. Farm businesses that are in a steady state, meaning they are not growing or shrinking their herd size, should have very little change in livestock values over the year.

## Livestock trading profit example

	Opening			Natural increase	Sales		Purchases		Deaths		Closing	
	No.	Opening value \$/hd	Total value \$	No. of calves born alive	No.	Sales value \$	No.	Purchase value	No.	No.	Closing value \$/hd	Total value \$
Mature cows	460	1,100	506,000		77	50,050	0	0	8	470	1,100	517,000
Rising 2 heifers (13–24 mths)	115	900	103,500		20	24,000	0	0	0	120	900	108,000
Rising 1 heifers (0–12 mths)	120	550	66,000		0		0	0	0	122	550	67,100
Calves			0	480	350	17,500	0		8			
Bulls	6	900	5,400		5	4,750	5	7,500	0	6	900	5,400
Other livestock	36	750	27,000							36	750	27,000
<b>Total</b>	<b>737</b>		<b>707,900</b>	<b>480</b>	<b>452</b>	<b>96,300</b>	<b>5</b>	<b>7,500</b>	<b>16</b>	<b>754</b>		<b>724,500</b>
											<b>Livestock trading profit 105,400</b>	

## MILK PRODUCTION

Milk is the main commodity produced on a dairy farm, so knowing how much milk was produced and sold from the farm is fundamental to the dairy business analysis, and puts the financial analysis into perspective.

We need to know the litres and kilograms of milk solids produced and sold for the year. Monthly milk statements from milk processors will list the volume of milk collected in litres, the percentage of milk fat and protein, and the kilograms of fat and protein in that milk (litres x fat or protein %). Adding together the kilograms of milk fat and protein will give total milk solids sold for the period.

This amount of milk sent to the factory is what is used to calculate milk production per cow and per hectare, and is also used in feed consumption calculations.

### Milk solids as a percentage of cow liveweight

This is a useful measure to understand a cow's production relative to her size and bodyweight. This is an indicator of how efficiently she is converting the feed she eats into producing milk solids.

#### How to calculate

First, milk solids per cow are calculated by dividing the total kilograms of milk solids sold by the number of milkers in the herd.

So if the business sold 130,000 kilograms of milk solids to the processor in a year, and they had 250 cows that milked for at least three months, then milk production per cow would be:

$$130,000 \div 250 = 520 \text{ kgs MS /cow}$$

Then this number is divided by the average liveweight of the cows in the herd.

So if the average per cow production is 520 kgMS, and the herd average liveweight is 550 kg, then the MS/LWT ratio is  $520\text{kgMS} \div 550\text{kgLWT} = 0.95$  or 95%.

The closer the ratio of milk solids to liveweight (MS:LWT) is to 1.0 or 100% or above, the more efficient the herd is at converting feed to milk, rather than to maintenance. This can be a useful measure of physical performance, but should only be used as a general guide as there are a number of factors that impact on the financial results.

This is completed on a whole-herd basis, based on the average per cow production and the average per cow liveweight. Caution is advised when using average figures as there will be a wide variation between individual cows in the herd.

### Grey areas

Only milk that is sold to a processor is included in the financial analysis.

Waste milk, colostrum and milk fed to calves may be recorded and can be counted in the per cow production calculations in a business analysis, but not in the financial reports.

DairyBase includes a default calculation for milk used on farm, based on an estimate of the amount likely to be fed to calves and wasted. This is included in the milk production calculations in the physical report and is factored into the overall energy requirements of the herd and therefore the grazed feed calculations.



## FEED

Producing and managing feed on a dairy farm is a vital component of dairy business performance. Farmers spend a lot of their time and resources managing feed.

There are many variables that can affect feed management, and decisions are made every day about how to supply enough feed of the right quality to meet the needs of all the livestock while maintaining the desired profit margin.

Managing feed supply also has potential risks for the business as seasonal conditions and commodity prices can change fairly quickly.

Understanding the flow of all feeds on and off the farm, how those feeds are used, and what those various feeds cost to produce or to purchase, is a major part of analysing business performance. It is also important for feed planning and budgeting.

### Feed and irrigation water inventory

The first step is to create an Inventory of all the feeds fed to all stock on the farm.

Good records are needed that show:

- how many tonnes of feed were brought onto the farm and what the types of feed were grains, concentrates, protein meals, hay, silage, straw and by-products
- how much hay and silage was made and where it was made – milking area or support area
- how much of each feed type was fed out and where it was fed – on the milking area or on the support area.

See fact sheet B6 for a detailed explanation on completing a feed inventory.

Once the inventory has been completed, we can then estimate pasture utilisation, the make-up of the cow's diet and the costs of each component of the diet.



## Home-grown feed production

This includes all the feed grown on the farm's usable area, including pastures and crops (measured in tonnes of dry matter). Home-grown feed is usually the cheapest source of feed available, so the more that is grown and consumed, generally the higher the farm profits. By taking the time to identify the fate of all home-grown feed, you can calculate the growing costs and measure how efficiently you are using your farm resources to feed your cows.

We need to calculate how much was grazed directly by livestock and how much was conserved into silage or hay during the year, both on the milking area and on the support area.

Whilst we can measure the number of hay bales in the shed or silage in the stack, it is harder to work out how much pasture was eaten.

The standard way to do this is by using the energetics method, by 'back calculation'. The amount of pasture grazed is calculated as the gap between total energy required by livestock over the year and the amount of energy imported onto the milking area or support area (hay, silage, grain and concentrates).

The DairyBase physical report shows an estimate of the total home-grown feed produced in tonnes of dry matter per hectare, including amounts grazed and conserved.

## Purchased feed

Almost all dairy farms rely on buying in feed during the year to supplement the home-grown feed. Purchased feeds are usually more expensive than home grown feeds, so they need to be used efficiently in the diet of cows and replacements.

Purchased feeds are classified as concentrates, fodder or other, such as by-products.

Concentrates are feeds which contain high levels of energy or protein, high levels of dry matter and are usually highly digestible by cows. They include grain, pellets, protein meals and by-products. Feed additives, such as minerals supplements and rumen modifiers, are also included with concentrates.

Purchased Fodder includes hay, straw and silage.

## Calculating feed costs

As feed costs are the largest costs on a dairy farm, it is important to know what they are, and the breakdown between home grown feed and purchased feed. Fact sheet C2 explains how to calculate feed costs.

The DairyBase physical report provides an estimation of feed costs per tonne of dry matter, for both home-grown and purchased feeds.

## Fertiliser

Fertiliser is an important input in feed production to supply nutrients that boost plant growth and balance soil health. Nitrogen fertilisers are commonly used on Australian dairy farms.

The DairyBase Physical report provides a measure of the amount of Nitrogen applied per hectare.

## FEED INVENTORY

A feed inventory is a record of all feeds used in the farm business over the year. To accurately capture the full profit and wealth position of the farm business you need to account for changes in the amount and value of feed on hand at the end of the year compared with the start.

The three benefits of an accurate feed inventory are:

- 1 to keep track of the amount of feed grown and harvested on the farm during the year, and what was its fate – fed on milking area, fed on support, or stored on farm and not fed out
- 2 to record how much purchased feed was brought into the farm, and where it was fed
- 3 to estimate the value of home-grown feed and purchased feed and irrigation water carried over from year to year.

### Creating a feed inventory

The first step is to create a list of all the feeds fed to all stock on the farm, including:

- opening and closing feed on-hand of all feed types
- tonnes of conserved fodder made on the milking area and on the support area
- tonnes of grain harvested on the milking area and on the support area tonnes of purchased fodder and grain and purchase price landed on farm
- detail of where feed was fed out – on the milking area and support areas.

In DairyBase you have an input screen to add each feed used, and by accurately completing this you will provide all the data needed to work out the feed amounts and value.

### Feed and irrigation water inventory changes

In some years more feed will be grown and conserved on the farm than what is needed, so fodder is accumulated and carried over for use in subsequent years. In some years the reverse is true, where feed grown does not meet the herd's needs so any stored fodder reserves are depleted. Conserved feed management is an important part in feed planning and risk management. Similarly, in some irrigation regions water can be purchased in one year, but not used and carried over into the next year.

It is important to capture the value of the carried over fodder and irrigation water as part of the business analysis. This change in inventory is included in the profit report in DairyBase.

If there is more feed on hand at the end of the year than there was at the start, this is recorded as an increase in feed inventory. It is included in the feed inventory change under variable costs in the profit report as a negative expense, to represent it has financial value to the business in the future, and to offset the costs that the business incurred to produce or purchase that feed. If the amount of feed on hand at the end of the year is less than at the start, this is recorded as an expense in the variable costs section. The cost reflects that we have used feed that has not been replaced, so the business incurs that cost.

### How do you value carried over feed and water?

DairyBase uses a standard market value for home-grown feed reserves based on an average figure for the region. For carried over purchased feed, the purchase price is used. For irrigation water carried over, use the market value from the temporary trading at the end of the irrigation season.

**Do a stocktake on the 30 June each year to record feed on hand, and keep good records during the year when silage and hay are made. Recording your average whole farm pasture cover on the 30 June is also a useful practise. While pasture on hand is not included in the feed inventory it is a valuable indicator for business performance.**

## LABOUR

Dairy farming is labour intensive compared to other types of farming, and labour costs are one of the largest costs to the business. Knowing the hours worked and the number of people engaged on the farm helps to understand the work required to run the business.

For business analysis, labour is measured in full time equivalents (FTE), and the common definition for the dairy industry is 50 hours per week for 48 weeks, with four weeks' annual leave. This means that 1 FTE equates to 2,400 hours worked per year.

Record the hours worked by each person each week, including by paid employees and family members or farm owners who may not be paid a regular wage for all the hours they work (known as imputed labour). Imputed labour hours are valued at a standard rate per hour and reflect what it would cost to replace those hours with paid labour.

In DairyBase you need to record your labour in full time equivalents (FTE), which may require the conversion of staff to FTEs.

The DairyBase physical report provides two measures of labour efficiency:

### 1 Cows milked per labour unit

The calculation is average number of milkers divided by the number of full time equivalents working on the farm. So if a farm milks 250 cows and there are 3.2 FTEs employed, then:

$$\text{Cows} / \text{FTE} = 250 \div 3.2 = 78$$

This measure shows the amount of labour relative to the size of the milking herd. This can be influenced by the type of farm infrastructure, especially the milking facilities, the level of automation of farm tasks, farm size and layout, and work practices.

### 2 Milk solids per labour unit

The calculation is total milk solids sold divided by the number of full-time equivalents working on the farm. So if the farm produced 130,000 kg of milk solids then:

$$\text{MS} / \text{FTE} = 130,000 \div 3.2 = 40,625$$

This measure shows the amount of labour used relative to the output of milk solids produced; it allows for the differences between farms in production of milk per cow.

## WATER USE

Water is vital for a dairy farm for growing pasture and fodder, for providing drinking water for stock and for cleaning milking facilities. For this reason most dairy farms in Australia are found in highly reliable rainfall areas or in regions that have access to reliable irrigation schemes.

Variation in rainfall or irrigation allocations can have a major impact on farm productivity and profit. Periods of droughts or floods cause disruption to normal pasture and fodder-growing activities, and require greater use of brought-in feed to meet herd requirements.

For business analysis it is important to know:

- annual rainfall, either from farm records or from the Bureau of Meteorology district average
- how much water was used in the year for irrigation
- how much land the water was applied to.

These measures help describe the efficiency of water use. By including the estimated water use and rainfall received, we can then estimate how much feed was grown from the applied water.

One useful measure that is calculated in DairyBase is the amount of home grown feed consumed or harvested per 100mm water applied to the usable hectares on the farm.

With irrigation water becoming an increasingly limited resource in Australia, it is important to assess how well the business has used the available water to grow feed on the farm.

The costs associated with irrigation and sourcing water are included as Feed Costs.

See fact sheet C2 for more details.

# GROUP C

## FINANCIAL PARAMETERS FACT SHEETS



# INCOME

Income is all the money earned by the dairy business for the year.

Income can be either cash or non-cash. Milk and livestock sales account for the majority of cash income, whereas the change in value of livestock over the year is non-cash income.

Income from the dairy business contributes to either farm cash income or gross farm income.

Farm cash income is the total cash income earned by the dairy farm business in the reporting period and is used in the **cash report**.

Gross farm income is the total cash and non-cash income earned by the dairy farm business in the reporting period and is used in the **profit report**.

Income is reported excluding GST.

## What to include

### Cash income

- Milk sales – net of transport, stop charges and levies
- Net livestock sales minus livestock purchases
- Sales of temporary water
- Home grown fodder or grain sales
- Dividends from shares – only if they are essential for doing business, for example, milk company shares
- Interest earned on farm accounts
- Rental from farm houses

### Non-cash income

- Changes in number and value of stock. Use a livestock inventory to capture the value of all livestock sales minus purchases (net of any transport, commissions and levies) and the change in the number and value of livestock over the year, through births, deaths and live weight gain. See fact sheet B3.

A decrease in the value of livestock is recorded as a negative, an increase as a positive.

## What to leave out

- Income from Government subsidies or non-farm related income, income support payments and child allowance
- Income from sale of capital items such as land or machinery – this is captured in a Balance Sheet and the Cash Report
- Proceeds of loans taken out during the year – this is captured in a Balance Sheet and the Cash Report
- Changes to the capital values of the farm assets land, machinery and herd or permanent water shares – this is captured in the Wealth Report
- Income that **is not** generated by the operations of the dairy business e.g. beef cattle sales, dividends from shares, a partner's income earned away from the farm, insurance claims.
- Personal income from tax refunds, gifts or inheritance, medical rebates and hobbies.

## GREY AREAS

- Income from rebates, for example the fuel rebate.
- Rebates should be deducted from the relevant expense.
- Income from contracting, such as fodder conservation. It depends on whether this is a business in itself or a sideline. If you make your own hay or silage and also use this gear to do some occasional baling for the neighbour, then that income (minus any expenses) can be included. However, if you regularly do hay or silage making around the district, the income and expenses are best kept out of the dairy business analysis.

## VARIABLE COSTS

### HERD, SHED AND FEED COST

Variable costs vary in line with the size of the enterprise.

They are separated into herd, shed and feed costs and help to estimate the impact of changes to milk production, herd size or season on costs. Adding herd, shed and feed costs together gives total variable costs.

Variable costs are included in both the [cash report](#) and the [profit report](#).

Variable costs are recorded excluding GST.

#### Herd costs

##### What to include

- Artificial insemination (AI) and herd test – including AI technician, semen, gloves, nitrogen for semen tank, herd test charges, cow and heifer identification
- Animal health – drench, drench guns, lice and parasite treatment and prevention, vaccines, injections, drugs and other treatments, teat sealants, vet fees and services
- Calf rearing – milk powder, de-horning, drenching, grain, pellets, straw and treatments for calves up to the time they are weaned.
- Short-term leasing of bulls and cows could be allocated under other herd costs

##### What to leave out

Capital purchases of stock or equipment, for example, new crush or drafting system.

#### Shed costs

##### What to include

- Electricity – electricity, gas, fuel for heating, cooling, lighting and milking
- Dairy supplies – rubberware, filter socks, vacuum pump oil, milking gloves, plant cleaning chemicals, sanitisers, teat spray

##### What to leave out

Repairs and maintenance to the dairy as these are overhead costs and electricity for irrigation, which needs to be included under Irrigation expenses.

If you have one electricity meter for house and dairy, include an estimation of the dairy power usage.



## Feed costs

Feed costs are the most significant variable cost and are usually the largest cost for a dairy business. It is useful to separate feed costs into those related to home-grown feed, and those related to purchased feed.

### Home-grown feed costs

#### What to include

- Fertiliser: all N-P-K-S fertilisers and trace element fertiliser products and compounds including blending, mixing, cartage, bin hire and spreading
- Irrigation: water costs, including water rights and sales, temporary transfers, pumping costs, rates for supply and drainage.
- Hay- and silage-making: for on-farm hay- and silage-making, including twine, plastic wrap, and contractors.
- Pasture and cropping: costs associated with pasture renovation and cropping, such as seed and contractor costs. Chemicals and contractors for the control of weeds and pests in pastures, channels, and roadsides etc.
- Fuel and oil.
- Agistment and short-term land leases or rental (less than 12 months), contract rearing of replacements after weaning, cartage to and from agistment.

### Purchased feed costs

#### What to include

- Purchased Fodder: bought in hay, straw and silage
- Concentrates: bought in grain, protein meals, pellets and other concentrates. Lead feeds, such as springer pellets, anionic salts, and heifer pellets post weaning
- Other feed: purchased by-products used as feeds, such as brewers grain, citrus pulp, grape marc
- Other feed costs: including feed additives, such as minerals, rumen buffers or modifiers, probiotics. Grain processing costs and the cost of washing out or altering grain contracts and cartage costs not already accounted for.

*Note: purchased feed costs are the cost delivered on farm including freight.*

#### What to leave out

- Repairs and maintenance on tractors, feed wagons, feeding systems or other equipment – these are overhead costs
- Labour costs for work related to growing feed except for contract labour brought in for that specific task, such as silage making or fertiliser spreading. Contractors use their own gear and organise their own work schedule.
- Lease costs on land used as part of the dairy business, which is leased for more than 12 months. Lease costs are included as a finance cost.

### Feed and irrigation water inventory changes

Feed and irrigation water inventory changes are classified as a feed expense under variable costs. This is the total opening value of feed and water on-hand less the closing value of all feed on-hand and water 'carried over' into the next year. An expense here means you have depleted your feed reserves and utilised some of them as feed throughout the year. Where this shows as a negative expense item this means you have increased your feed or water inventory over the year and this increase is offset against the total feed expenses for the year.

### Calculating feed costs per tonne

A business analysis combines the dollars spent on feed costs with the physical amounts of feed used from the feed inventory, and the estimated pasture consumption, to calculate the costs per tonne dry matter of all feeds used. This is a useful measure when making decisions about what feeds to purchase, and whether to conserve home-grown fodder or buy it in.

The DairyBase physical report provides an estimation of feed costs per tonne of dry matter for both home-grown and purchased feeds.

For purchased feeds, the calculation is fairly simple:

$$\text{Total \$ spent on purchased feeds} \div \text{tonnes of feed purchased (in dry matter)}$$

For home-grown feeds, the calculation relies on some estimations and assumptions, to determine the amounts of feed grazed and conserved and the approximate costs of each.

#### For grazed feed:

$$\text{Total \$ spent on growing feed} \div \text{the estimated tonnes of feed grazed (in dry matter)}$$

#### For conserved feed:

$$\text{Total \$ spent on harvesting and conserving feed} \div \text{tonnes of fodder conserved (in dry matter)}$$

## OVERHEAD COSTS

Overhead costs are the costs that are incurred when operating a dairy business, but are not directly related to the size or production on the farm.

They include administration, insurance, land rates, paid and imputed labour, professional fees, repairs and maintenance and depreciation.

Overhead costs can be cash overheads and non-cash overheads. Non-cash overheads include imputed labour and depreciation.

Total cash overheads are used in a **cash report**.

Total cash and non-cash overheads are used in a **profit report**.

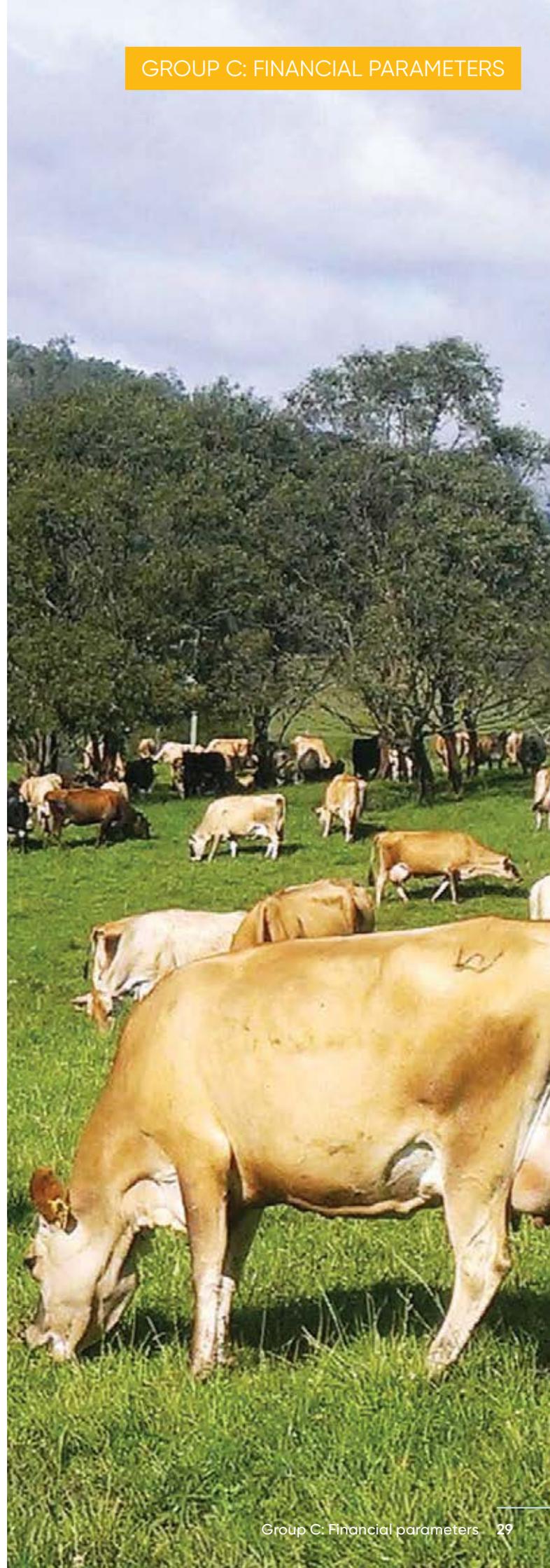
### What to include

#### Cash overhead costs

- Rates: Shire rates and charges, domestic water rates, where applicable.
- Registration and insurance: insurance for farm vehicles, including comprehensive insurance. Farm insurance for stock, plant, fodder, buildings, sickness, accident and trauma.
- Repairs and maintenance for farm improvements, including buildings, fences, yards, irrigation structures, laneways, plant and equipment.
- Paid labour: wages, WorkCover, superannuation, staff amenities, PAYE tax, training, protective clothing and sharefarmer costs.
- Other overheads: telephone, professional advice, subscriptions, postage, accountancy fees, donations, waste removal, and bank charges.

#### Non-cash overhead costs

Non-cash costs, or imputed costs, are an estimation in the absence of a real cash cost allowing comparisons between years and other businesses.





There are two common non-cash overhead costs:

## 1 Depreciation

This accounts for the loss in value of assets such as machinery and equipment, over its expected reasonable working life. If an asset has an expected working life of 10 years, the annual cost of depreciation is 1/10th or 10 per cent of its value.

Depreciation used for dairy profit analysis is different to that calculated by an accountant for tax purposes.

To calculate depreciation, make a list of all the plant, machinery and major equipment on the farm and estimate the market value at the start of the financial year, this is the **opening value**.

DairyBase uses a standard rate for depreciation of 10 per cent per year across all plant and machinery, unless you choose to enter your own figure. This will be a bit too high for some gear like seeders or spreaders and a bit too low for quad bikes and feed wagons, but on average will give a reasonably good estimation across the board.

The **closing value** is calculated by taking the opening value and deducting the 10 per cent for depreciation. This closing value becomes the opening value for the next financial year. The depreciation is the dollar value of the 10 per cent reduction in value.

For new equipment bought during the year, add in to the list at the cost price, and then depreciate the value according to how many months it has been owned. For equipment sold or traded, remove from the list and adjust the amount of depreciation accordingly.

## 2 Imputed labour cost

This is the value put on any work carried out in the business that is not directly paid for by wages or salary, such as from farm owners and family members. It is usually assigned an industry agreed cost based on an hourly rate for time worked.

To calculate, record the hours worked each week by people that are not paid and multiply by the number of weeks worked in the last year. This includes a sharefarmer who also has assets in the business, such as cows or machinery. This will give the total hours of 'unpaid' work.

Multiply the number of hours by an agreed hourly rate for the value of the work, a common amount is \$25–\$30 per hour. DairyBase has a set hourly rate for imputed labour for each financial year which cannot be overridden.

## What to leave out

- Financing costs: interest payments, lease costs, principal repayments on loans and credit cards
- Capital purchases for new machinery, livestock or other assets
- Tax payments



## COST OF PRODUCTION

Calculating the cost of production is a basic step to understanding a dairy business. Whilst milk is the main product, dairy farming also produces livestock and feed from the same inputs. So when analysing the business, the cost of production includes the cost of producing milk, livestock and feed. Cost of production is usually expressed as \$/kg milk solids or cents/litre.

There are three levels to calculating cost of production:

### 1 Farm working expenses (FWE)

These are all the direct or cash costs that have been incurred during the year, including:

#### Variable costs

Herd, Shed and Feed costs

#### Cash Overhead costs

Administration, Repairs and Maintenance, Paid Labour

$FWE = \text{Variable costs} + \text{cash overhead costs}$

$FWE \text{ in } \$ \text{ per kg milk solids} =$

$FWE \div \text{total milk solids produced}$

This measure is found in the DairyBase cash report.

**Farm working expenses** is a useful measure to identify the cash costs of production and prepare cash flow budgets. It can help in short term planning and adjusting to changes in input costs or milk price.

### 2 Total operating costs (TOC)

This includes all the cash and the non-cash expenses incurred during the year, including:

#### Farm working expenses

All the cash variable and overhead costs described above.

PLUS an adjustment for changes to feed and water inventory:

#### Imputed labour

This is the value of the hours worked by the farm owners or operators, and family members, who are not paid a wage or salary for their time.

#### Depreciation

This is the calculated cost for the loss in value of plant and machinery used to run the business.

$TOC = \text{variable costs} + \text{cash overhead costs}$   
 $+ \text{imputed labour} + \text{depreciation}$   
 $+/- \text{feed and water inventory}$

$TOC \text{ in } \$ \text{ per kg milk solids}$

$= TOC \div \text{total milk solids produced}$

### 3 Cost of production (COP) including Inventory change

The difference between the total operating costs and the cost of production (including inventory change) is that an adjustment is made for livestock inventory and livestock purchases. In a steady state system where there is no change to livestock inventory the cost of production (including inventory change) and total operating costs will be the same.

#### COP (inc Inv Chg)

= variable costs

+ cash overhead costs

+ imputed labour

+ depreciation

+/- Feed Inventory Changes +/- Livestock Inventory Changes (closing value – opening value – purchases)

This measure is shown in the DairyBase profit report.

**Cost of production (COP), including inventory change,** is the most accurate measure of cost of production as it takes into account the impact on costs caused by significant inventory changes. It is particularly relevant for farms that are in a state of change.

### What to leave out

Finance costs, leasing costs, principal repayments, capital purchases, personal drawings, tax payments are not included in cost of production.

### Caution with average costs

It is important to understand that the COP in a DairyBase report is an **average** of all costs spread across all the units of production for the year. Average figures give a useful summary of whole farm costs, and give a ballpark picture of farm performance.

However, average figures should not be used to predict what the implications would be for making changes to the business operation, such as increasing or decreasing milk production. These decisions need to consider a marginal analysis using marginal cost of production, rather than average cost.

**Where feed inventories finish the year lower, the adjustment will increase feed costs and conversely an increase in feed reserves over the course of the year will lower feed costs.**

## EARNINGS BEFORE INTEREST AND TAX

Earnings before interest and tax (EBIT) is the key measure of profit from operating the business before interest, lease and tax payments have been deducted. It is found in the DairyBase profit report.

### What to include

EBIT is calculated from gross farm income minus the variable and overhead costs.

Gross farm income includes all income from cash and non-cash sources including net milk income, livestock trading profit (or loss), feed sales and other farm income.

Costs include variable costs (herd, shed and feed) plus overhead costs (cash overheads plus Imputed labour and depreciation).

$$\text{EBIT} = \text{Gross Farm Income} \text{ minus } \text{variable costs} \\ \text{– overhead costs (cash and non cash)}$$

$$\text{EBIT } \$/\text{kg MS} = \text{EBIT} \div \text{total milk solids produced}$$

### What to leave out

- non-farm income
- interest and lease payments, principal repayments, capital expenses, personal drawings and tax.

### When is it used?

EBIT is used to calculate the key profit measures of return on total assets and operating profit margin.

The level of EBIT is important because it provides the profit to fund debt and lease servicing and growth in the business owner's wealth.

EBIT \$/kgMS and EBIT \$/ha are measures that can be used to compare the performance of one farm business to another, as they show the operating profit regardless of the debt structure of a business. Caution still needs to be used when making these comparisons given a number of other factors, out of the business owners control, can impact EBIT such as rainfall and milk price which often varies between farms.



## FINANCE COSTS

Most farm businesses use borrowed money to start up, grow and develop over time. Borrowed funds are used to invest in the business, to build new facilities, purchase more livestock, buy land or machinery. Farmers may also set up arrangements with lenders to assist with managing cashflow over the year, such as overdrafts or line of credit facilities; or may use credit cards, hire purchase or leasing to finance farm assets.

Borrowing money comes at a cost, over and above repaying the principal. Lenders charge interest on the use of their money, at varying rates depending on the term and the risk, and the credit rating of the borrower.

For business analysis, it is important to know how much it costs per year to pay the interest on the loans. This is called **debt servicing**.

Start by preparing a list of all debts incurred by the business, opening and closing balances for the year, and the repayment amounts. Then, from bank statements separate out the interest payments from the principal repayments. It can be harder to separate this out with short term hire purchase loans or chattel mortgages, which have principal and interest built into one payment.

### Interest costs

#### What to include

Interest costs are the amount of interest paid on all farm related debt for the year.

#### What to leave out

- Principal repayments
- Bank fees – these are included in Interest costs
- Personal loans not related to the business

### Lease costs

#### What to include

Lease costs are the costs incurred for leasing assets that are used in the business, mainly relating to farm machinery and land.

Include the cost of lease for land if the lease is for 12 months. If less than 12 months the lease costs is classified as a feed cost.

#### What to leave out

- Cost of leasing water – include in feed cost
- Cost of leasing stock – include in herd costs



## ASSETS, LIABILITIES AND EQUITY

### Assets

Assets are all the resources used to operate a dairy farm business, including both owned and leased assets.

#### Assets include

- land and buildings, including improvements such as fences, stockyards, water troughs and haysheds
- permanent water rights, which depending where you farm, may or may not be separated from the land title
- plant and equipment, including tractors and machinery, milking equipment and vats, irrigation plant and farm vehicles
- livestock
- feed on-hand
- cash and farm management deposits
- milk company shares.

For business analysis, assets are separated into current and non-current assets.

**Current assets** are cash or other assets expected to be converted to cash within a year. They include accounts receivable, prepaid expenses, farm management deposits and feed on hand.

**Non-current assets** are assets that are likely to be held for at least a year and are not as easily converted to cash, or not expected to become cash within the current year. Examples include land, buildings, livestock and plant and equipment.

#### Valuing assets

For business analysis, all assets must be assigned a value. When valuing assets, use the current market value if you were to sell within reasonable timelines. You need to be realistic, and consider average values over time, rather than the highs and lows that can occur.

### Liabilities

Liabilities are the debts owed by the business.

Liabilities are separated into current and non-current liabilities.

**Current liabilities:** money owed by the business on a short-term basis, and generally due to be repaid within one year. For example, an overdraft or credit card debt, accounts payable and milk payment advances.

**Non-current liabilities:** money owed by the business and not due to be repaid within the next year. For example, term loans, lines of credit, lease or hire purchase on plant and equipment longer than a year.

## Equity

Equity is the total value of the business that the owners own. It is also known as **net worth**, owner's capital or wealth.

$$\text{Equity} = \text{Assets} \text{ minus } \text{Liabilities}$$

## Measures of equity

Equity is measured in total dollars and is commonly expressed as a percentage of all owned assets.

$$\text{Equity \%} = \text{Equity} \div \text{Total Assets Owned} \times 100$$

Equity percentage is commonly used by banks when assessing the security and borrowing capacity of the business. Banks consider a range of factors including the ability to generate and manage cash flow.

## Change in equity or net worth

This shows how wealth has accumulated or declined over the year. It is the difference between equity at the start of the year and the end of the year, and is measured as the \$ change and the change in equity percentage.

## Preparing a Balance Sheet

A balance sheet lists all assets and liabilities at a point in time, to calculate net worth. It is usually prepared at the start and again at the end of the financial year, so changes in net worth can be measured.

To create a balance sheet, you will need lists or inventories of all the assets used by the business. Fact sheets B3 and B6 show how to prepare livestock and feed inventories.

You will also need a plant and machinery inventory, with a list of all the equipment on farm and the estimated market value. This will assist in calculating the cost of depreciation.

A list of all debts is also useful, showing the type of loan, the term of the loan and the repayment schedule.

It is important to highlight that this balance sheet for business analysis is based on market value for assets. It will be different to a balance sheet or depreciation schedule provided by an accountant for tax purposes, as several key asset values in a tax analysis generally do not reflect market value.

## Capital gain

Capital gain or growth is the **increase** in asset value over time. Capital gain typically happens regardless of how the business is performing. The most common example is land value and water rights.

Livestock increase in value as they age, until the point of culling, and a growing herd will see capital growth, whereas a stable herd will typically remain at similar values over the year.

Analysis of farm business performance typically will have two approaches, one that excludes changes in capital value, which is the normal approach in benchmarking and comparative analysis measures and one that includes changes to capital values, which is typically completed at an individual farm business level.

The DairyBase wealth report does not include capital gain in calculating return on total assets.

## Depreciation

Most other farm assets will **depreciate** or lose value over time, as the more they are used the less valuable they become. Depreciation is the reduction in the recorded cost of a fixed asset.

In business analysis this loss of value of assets is calculated and included as depreciation in the profit report.

## What to leave out

Leave out non-farm assets such as rental properties, vehicles, shares, superannuation and any non-farm income from them, as these are not farm assets.

## RETURN ON ASSETS AND RETURN ON EQUITY

Return on assets is a key measure of profit that describes how well the farm business has used its assets to generate a return for the owners.

It can be used to compare efficiency of your business between years, to compare with other farm businesses and to compare alternative uses of the capital, such as bank deposits or investing in the share market.

The wealth report in DairyBase shows two measures on return on assets:

### 1 Return on assets (ROA)

This is the return on assets owned by the farm business (excluding leased land).

This is calculated from the Earnings Before Interest and Tax (EBIT) amount in the Profit report less any lease costs, divided by the value of owned assets, and shown as a percentage.

$$\text{ROA \%} = (\text{EBIT} - \text{lease costs}) \div \text{assets owned} \times 100$$

### 2 Return on total assets (ROTA)

ROTA is the primary measure that shows how well a business uses its total assets, including all leased assets. It indicates the amount of profit earned relative to the amount of money invested in all assets.

$$\text{ROTA \%} = \text{EBIT} \div \text{Total assets managed} \times 100$$

This is a common measure used in business comparisons, as it shows how the business performed from trading or operating, and does not include debt or the cost of servicing debt, or capital growth.

The return on assets result for a farm business should be comparable to other investment opportunities, or at least as good as the bank prime lending rate.

It is also important to know the value of any assets that are leased, such as land or equipment, so you can determine whether the return you are making is worth the cost of leasing those assets.



The Wealth Report in DairyBase also shows the return on equity:

## Return on equity (ROE)

This is a measure of the rate of return on the owner's investment in the business. It is generally desirable to have a return on equity greater than the return on total assets, indicating that the business is growing and providing opportunity for increasing wealth.

ROE is calculated from the net farm income (NFI) in the profit report, divided by the value of the owner's equity, and shown as a percentage.

$$\text{ROE \%} = \text{Net Farm Income} \div \text{Equity} \times 100$$

Remember that net farm income is the profit remaining after the cost of financing the business (interest and leasing costs) has been deducted from EBIT.

Return on equity is more useful at the individual farm level than for comparing between farms, as people have different attitudes to debt and investment.









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