

Introduction

What this book is about

This book is about pasture feed budgeting. Its purpose is to provide everyday pasture farmers, managers and workers with a clear understanding of what pasture feed budgeting is all about, and how to do it.

The book strives to keep things simple and straightforward and to provide a clear understanding of each aspect of feed budgeting and its relevance in pasture farming. The book takes a no assumed knowledge approach with its presentation. This may prove tedious for some readers but for others is likely to be a welcome relief. This in fact is one of the main reasons for writing this book. It is the author's observation that currently too much of the knowledge in pasture feed budgeting is viewed as assumed knowledge when feed budgeting is being debated and taught to farmers. This leaves many recipients confused and frustrated while those presenting pasture feed budgeting information wonder why the uptake continues to be so poor.

As part of this no assumed knowledge approach, a glossary of terms, list of abbreviations and comprehensive appendices are included with the book. The appendices include further reading recommendations and some links to useful websites.

How to use this book

Each chapter of the book deals with distinctly different topics, so that each chapter can be used as a largely stand-alone reference source. It is inevitable however that some chapters rely on the content presented in prior ones.

At the beginning of each chapter is a section headed 'What is in this chapter'? This is intended to give the reader a quick overview of the chapters content and purpose.

At the end of chapters or sections within chapters are 'take home' messages. These are statement-summaries or checkpoints that may help you in seeing the 'wood from the trees'.

To simplify things, the book mainly uses pastured dairy cow production in its examples. This is because dairy cows are *very* well documented for their pasture feed requirements, body size, lactation and non-lactation requirements, body condition score, including the requirements their young stock. Generally, the terminology and units used with dairy stock are consistent across countries and regions, probably more so than for other grazing species and classes. There is also a lot of documented feed budgeting information on pasture growth and pasture feed supplements that has come out of the dairy industry world wide. Much of this information is readily transferable and adaptable to other ruminant species and classes of stock.

You can refer to the appendices for relevant information on dairy stock as well as other classes of grazing animals such as beef, sheep and goats and substitute that

information in the examples given throughout this book. The principles used are exactly the same.

Accompanying feed budgeting spreadsheet

Accompanying this book is a simple but fully functional suite of forecast feed budgeting spreadsheet templates. You are encouraged to play around with these as they will help you to more quickly learn and appreciate the power of feed budgeting.

You are welcome to adapt and use these spreadsheets as you wish however please provide the appropriate acknowledgement where due.

About the author Roger Martyn

After graduating with an agricultural science degree from Massey University, New Zealand Roger Martyn realised that he really didn't have a clue how to go about allocating pasture to grazing stock. This would eventually catch up with him.

Roger's initial career years involved working in horticulture during New Zealand's horticultural boom and bust years of the 80's. Roger then started his own farm consultancy business where he soon came to the realisation that to provide his clients consulting value, he had to get to grips with feed budgeting. He finally got around to learning what it was all about and this soon became a very important part of his consulting focus.



Unhappy with pasture measurement devices that were currently available, Roger devised an electronic pasture meter of his own. With the collaboration of a local electronics prototyping and development firm, Novel Ways of Hamilton, New Zealand, the GrassMaster™ capacitance pasture meter was developed and this is now sold to farmers, extension agents, farm consultants, agronomists and scientists around the world.

In 2003, Roger and his family moved to NSW, Australia where he has since completed a Masters degree in Environmental Planning from Macquarie University.

In 2010, Roger launched an online web site 'Grazetech', www.grazetech.com.au which is dedicated to offering Australian farming the best in grazing management technology and information.

Chapter 1
Pasture Feed budgeting.
What is it and why do we do
it?

1.1 What is in this chapter?

This chapter is introductory in nature. It is required reading.

The actual details of what pasture feed budgeting is and how it is used are covered later on in the book so please do not be put off by terms and concepts that are introduced at this stage. Just get a feeling for the subject and move on.

The purpose of the chapter is to give a brief overview of what pasture feed budgeting is, how it can be used and why it should be an important part of every pasture based farm management system.

This chapter also attempts to provide perspective on how the various components of pasture feed budgeting fit together in a pasture farming situation – it attempts to provide a big picture first, with details to follow.

This may be a useful chapter to revisit periodically in order to clarify where the detail you learn later in the book fits into the overall pasture feed budgeting picture.

1.2 What is Pasture Feed Budgeting? -introductory notes

Pasture feed budgeting is the process of matching pasture feed *supply* to animal feed requirements (*demand*).

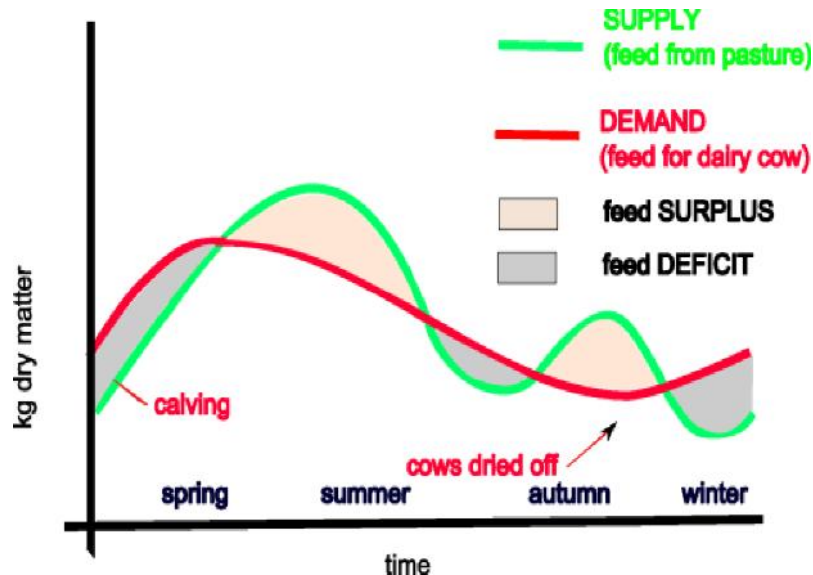


Figure 1.1: Typical pasture Supply and Demand relationship for seasonal dairy production in temperate climate

1.1 describes a 'best fit' relationship of pasture *supply* to animal *demand* for pasture of a typical seasonal dairy production system in a temperate climate.

The challenge in seasonal dairy pasture feed budgeting is to match the supply of pasture with the demand for pasture feed generated by dairy cows.

In pasture based farming, the argument is that the closer the supply of and demand for feed can be aligned, the more efficient the production system will be.

It is argued therefore that the efficiency of a pasture production system will be at its greatest when we can have a cow consume all the pasture grown, and by having her grazing the pasture directly in-situ, in the paddock, with a minimum of wastage, and then have her converting that grazed pasture into as much production (growth, pregnancy, lactation) as her genetic potential allows.

NB: For simplicity, the terms 'feed budgeting' and 'pasture feed budgeting' are used interchangeably throughout this book.

As can be seen in figure 1.1, there are times when the supply of pasture is likely to be in surplus, and other times when the demand for pasture will be exceeded by stock demand for it. Minimising these surpluses and deficits is an important objective in pasture feed budgeting .

Matching supply with demand might be achieved in several ways, for example.

- by matching the calving date with seasonal pasture production characteristics so that the demand for feed most closely matches the supply.
- by altering stock numbers when feed surpluses or deficits occur
- by conserving the pasture surpluses as silage, hay, or standing pasture and then transferring those 'harvested surpluses' to times of deficits by feeding them out again as feed supplements.

These processes are all examples of pasture feed budgeting. These particular examples all involve looking at whole-farm and whole-herd situations over whole seasons - i.e. they are all 'big picture' feed budgeting processes. These and other options will be explored in much more detail later on in this book.

There are also other processes that come under the banner of feed budgeting which occur on a more detailed level that involve individual animals or groups of animals on much smaller areas and time frames.

For example

- working out how much pasture area to feed to a cow on a given day to meet her feeding requirements.
- working out how many bales of hay are required to feed a herd of cows for example 30% of their daily diet.

It is knowing and understanding these sorts of processes that provide the knowledge building blocks to successfully implement big picture whole-farm feed budgeting. It is in getting these processes correct and implemented into big picture forecast feed budgeting that the real money in pasture farming can be made.

The different levels of feed budgetin

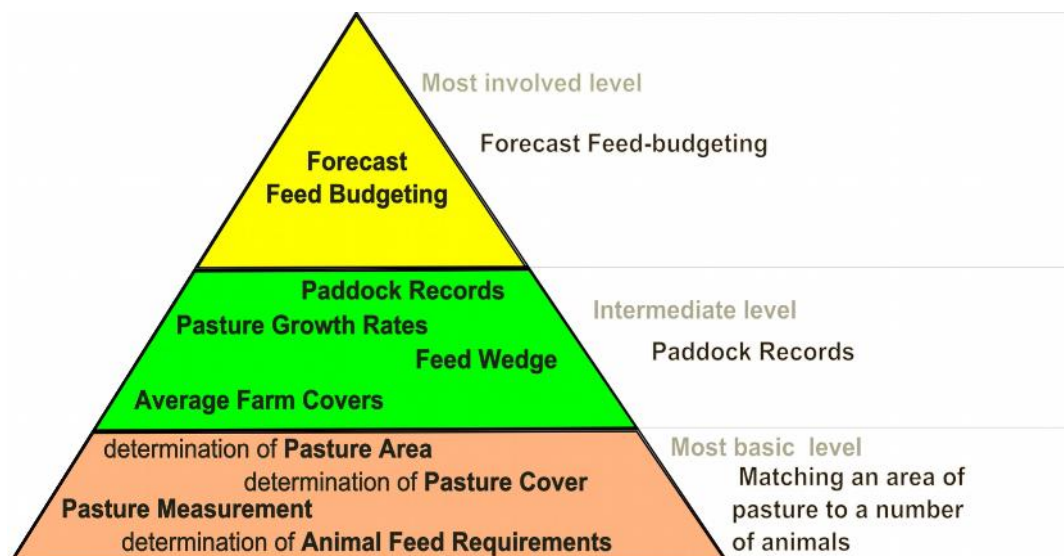


Figure 1.2: Figure illustrating differing levels of feed budgeting complexity and how these levels build on each other.

At its simplest, feed budgeting might consider the feed requirements of single animals on a particular day whereas more complex feed budgeting might involve whole farm production systems consisting of several classes of stock over all seasons of a year.

The methods used in the more complex levels of feed budgeting are built on principles used in the simplest – see figure 1.2.

In order to gain a comprehensive understanding of feed budgeting, an examination of its most basic form is warranted .

Matching pasture area to grazing animal numbers

Matching an *area* of pasture to a *number* of animals feeding on that area . This is the most basic and fundamental level of feed budgeting.

This requires knowing *how much* pasture there is in a given area ie the *pasture cover* in a given area- see Chapter 10.

This likely to involve the *measurement* of pasture with pasture measurement tools- see Chapter 18.

This will also require knowing what the *feed requirements of animals* -see Chapter 7.

Paddock Records

Identifying *whic* pastures are ready to graze and identifying *when* they will be ready to be grazed. This level is slightly more involved and builds on information collected in the first level.

This involves measurement of individual paddock pastures and recording them for *Paddock Records* purposes- see Chapter 19.

Collating individual paddock record measurement readings from their highest to lowest in order to determine which paddocks should next be grazed is often termed as describing a '*Feed Wedge*' – see Chapter 11.

By measuring the same paddock on different days, it is also possible to determine *Pasture Growth Rates*, - see Chapter 9. Pasture Growth Rates can be used to predict how much pasture feed will be available at a future date. It is also useful information to determine how well individual paddocks are performing relative to others, or how they respond to treatments such as fertiliser applications, improved pasture species, drainage and different grazing regimes.

Paddock records can be used to determine *Average Farm Covers* – see Chapter 12. Average Farm Covers can provide useful benchmarking information for describing the state of the overall feed situation on a farm as well as providing essential *feed level target* information for use in forecast feed budgeting - see Chapter 17.

Forecast feed budgetin

At its highest level, feed budgeting brings together all of the elements described above, i.e. paddock areas, pasture covers, pasture growth rates, average farm covers, pasture and non pasture feed supplements that are available, farm animal numbers – by class of stock, and their feeding requirements.

Together these can be used to create a *Forecast Feed Budget*. This can be used to forecast pasture production and animal feed requirements for periods from as little as 10 days to periods of several months and more - a valuable farm management planning aid - this is covered in detail in Chapter 17.

Forecast Feed Budgeting is very useful in almost all farm management decision-making processes. It can be used to determine seasonal stock numbers and stocking rates, farm stock movements, calving or lambing dates, when and how much pasture supplements can be made, likely production quantities and profiles, it serves to quantify many of the financial expenditure and income aspects of farming.

Forecast feed budgeting has similarities to cash forecast budgeting, allowing you to anticipate shortfalls and identify surpluses.

Forecast feed budgeting can be used in a 'what if?' predictive context allowing you experiment with different management strategies and scenarios. This is a powerful farm management tool for managing risk, especially when exploring adverse scenarios such as a drought or flood. Knowledge gained from this type of modelling can assist in decision making that is pre-emptive rather than reactionary, should such scenarios eventuate.

Forecast feed budgeting can be carried out on paper, on spreadsheets, or with the assistance of proprietary feed budgeting software.

It is arguably one of the most powerful management tools available for pasture farmers. Unfortunately too few avail themselves of its potential.

1.3 Why should we pasture feed budget?

There are many possible reasons including:

- To ensure grazing animals are sufficiently well fed so that they can reach their production potential.
- To maximise the possibility that production targets are realised.
- To minimise wastage of pasture feed.
- To predict feed surpluses and deficits and do something about them.
- To foresee any requirements for feed supplements well in advance. This allows us to plan for feed supplement expenditure if required and even forward order supplement requirements at preferential buying rates.
- To better accommodate and minimise the impact of adverse events such as floods or unexpectedly long dry spells.
- To facilitate the maximum possible financial return on pasture as a feed input.

Since pasture is usually the least-cost feed input available for grazing animal production systems (and therefore likely to have the most impact on profit) *why wouldn't we want to know as much as possible about how we can quantify and qualify pasture as a feed source?*

Pasture feed budgeting provides a means of doing this.

For non-irrigated dairy farms in southern Australia, it has been found that (positive) variations in farm operating profits of between 30 and 45% can be accounted for by the amounts of home-grown forage consumed

1.4 Key points to take from this chapter...

- All pasture feed budgeting processes ultimately involve matching feed supply to feed demand.
- There are different levels of feed budgeting complexity that start with matching an area of pasture to an animal requirements. These levels progress with different levels of complexity culminating in full forecast feed budgeting for entire farm pasture production systems.
- Each level of complexity builds on information gained from less complex ones.
- Since pasture is usually the least-cost feed input, why wouldn't we want to know how to quantify and qualify it?
- Pasture feed budgeting allows you to maximise the efficiency of converting pasture into farming products.