Grazing Dairy Pastures

A manual for use in the
Target 10 Pasture Program

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Contents

Acknowledgments

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The manual makes use of original material from:

- Pasture Management for Dairy Farmers, Dept of Agriculture Victoria, 1993.
- Pasture management for Tasmanian Dairy Farmers, DPIWE, Tasmania, 2000.

The following people have contributed significantly:

- Danny Donaghy, Research Fellow, Tasmanian Institute of Agricultural Research, Burnie.
- Greg O'Brien, Dairy Extension Officer, NRE, Ellinbank.
- Phil Shannon, Dairy Extension Officer, NRE, Cobram.

The following people from the statewide Target 10 Pasture team have contributed significantly to the planning, development, and editing of this manual:

- Phil Shannon, Greg O'Brien, Sean Kenny, Michel Ryan, Sue Schryver, Chas Dickens, and Kate Mirams.

Many individual farmers and farmer members of Target 10 committees have provided valuable support, guidance, and feedback, since 1992 when the Target 10 Pasture program began.

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Foreword

Brad Missen, deputy chairman, Gippsland Target 10, and dairy farmer at Denison

When Target 10 was first introduced in 1992, 10 years ago, the aim was to increase pasture consumption by 10% on 50% of Victorian dairy farms. The information on how to increase pasture consumption was available, and Target 10 was set up to make the information easily accessible to farmers.

This method was so successful that thousands of Victorian dairy farmers have benefited from the program. Other groups, such as BeefCheque, for beef cattle and sheep graziers, have been set up to emulate what Target 10 has achieved.

Target 10 then went on to develop other programs such as Dairy Cow Nutrition, Soils and Fertilisers, and Dairy Business Focus, as the need for information and the opportunity to tackle these issues in groups arose.

Research in the last few years, mainly on ryegrass, has provided great advances for us dairy farmers, in pasture consumption, quality and persistence. These increases are multiplied when used in conjunction with the newly available species, bred to perform best under the new management.

Like all other areas of dairy farming, research and development has been continuing, so with this in mind it became time to update the pasture manual to include the latest findings.

When the Target 10 grazing management program was first developed, the guidelines of a pasture being "ready to graze" were a height of 12 to 15 centimetres or a pasture mass of 2,200 to 2,400 kilograms of dry matter per hectare (kg DM/ ha). Recent research has found that leaf stage is a more appropriate indicator of a pasture being "ready to graze". This method of grazing management identifies when the plant is ready to be grazed, to achieve high pasture production, utilisation, quality, and persistence.

Pasture management is of vital importance to the future viability of Victorian dairy farmers, as we need to produce low-cost milk to remain competitive in the world market. Pasture is our cheapest feed source and is able to be developed along with the farm to increase

consumption per hectare. As you will read in this manual, often the more pasture you consume per hectare the cheaper per tonne and megajoule the pasture becomes.

My family got involved in the original Target 10 Pasture Management Program, in the early years of Target 10, and production was greatly improved through managing to maintain a pasture wedge. When the emphasis changed to leaf stage, we jumped at the chance to try it.

We have used leaf stage as an indicator for grazing for two seasons now and have found it to be very versatile and to have greatly increased pasture production and consumption. The first season, we lifted pasture consumption by 1 tonne per hectare; and perhaps in the next couple of years, with good grazing management, we will be able to lift it by a further 1 to 2 tonnes per hectare, as the pasture is renovated.

The easiest part of using leaf stage for grazing management is that it can be done while you are getting the cows in or setting up the paddock for the next grazing. You can just jump the fence and count the leaves to make the next decision. You don't need any special tools (a rising plate meter) or a calculator or a degree in mathematics!

The versatility of this system means that it can be applied to different pastures on different soil types and fertility, with differing pasture heights and densities. The new species of ryegrass can differ greatly in their growth pattern and structure and traits, from short, dense pastures through to taller, erect, less dense cultivars. These different cultivars are suited to different paddock conditions. Using the old guide of 2,200 kg DM/ ha, or 12 to 15 cm pasture height would compromise the performance of these different cultivars.

The development of this manual and of the Target 10 Grazing Dairy Pastures program has involved many people, from farmers who have trialed and given feedback, to the researchers and extension officers. I would like to thank all of those who have contributed to the improvement of pasture management over the years.

The manual is of limited value unless you attend the Target 10 Grazing Dairy Pastures program and experience the support and enthusiasm of a group of farmers with whom you can share knowledge and experience with, as you in implement a better grazing management system on your farm.

I wish everyone good luck with the challenge of managing pastures for high production, utilisation, quality and persistence! I think you will find that, once you have got the hang of using leaf stage, this is a much easier and more effective system to use. This is Information that Works!

1. Grazing management: the profit driver of pasture-based dairy farming

Learning outcomes:

This chapter will help you to:

- Understand the effect high pasture consumption has on dairy farm gross margins and profitability.

1.1 Victorian pasture production and profitability

Victorian dairy farmers are among the most efficient in the world because:

- **Pasture is the major feed source** for milk production.
- A temperate climate provides a natural advantage, allowing **year round production of high-quality ryegrass pastures** at low cost.

The amount of pasture grown per hectare varies depending on climate and management. A hectare of pasture in Victoria can produce between 3 and 18 tonnes (t) of dry matter (DM) each year. On many farms, only 50% or even less of that pasture is eaten; the rest is wasted. On some farms, 70% to 80% of the pasture grown is eaten; and not surprisingly, these are the farms that have the highest profit.

Pasture management that achieves a high pasture consumption is the crux of profitable dairying. Farmers in the top 25% of return on assets consistently achieve higher pasture consumption than average, as shown in Figure 1-1.

Figure 1-1: Pasture consumption (t DM/ ha) for average and top 25% of farmers, based of return on assets, in dairy regions of Victoria

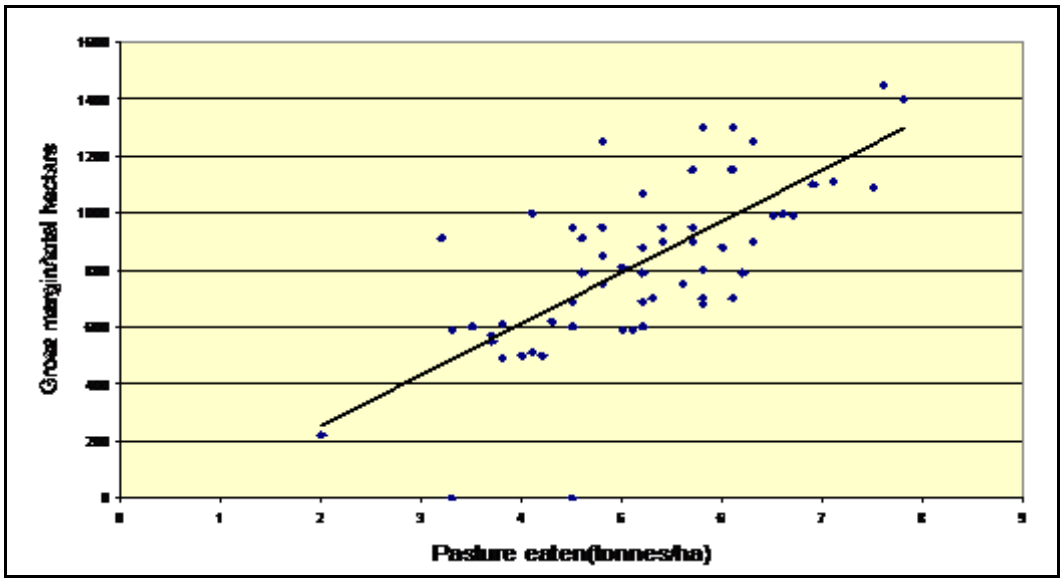
Region	Pasture consumption (t DM/ ha/ yr)	
	Average return on assets	Top 25% return on assets
South West	5.35	6.14
Northern Irrigation	8.70	10.52
North East	4.50	5.04
Gippsland (Rainfed)	8.18	8.71
Gippsland (Irrigation)	9.00	12.00

Source: Quin (2001) Dairy Farm Performance Analysis Biennial Report 1997/ 98 & 1998/ 99.

Figure 1-2 shows the relationship between increasing pasture consumption and increasing gross margin per hectare, for a number of

farms from the western district of Victoria. As the amount of pasture consumed per hectare increases, the gross margin per hectare increases.

Figure 1-2: Pasture consumption and gross margin per hectare



1.2 Summary

Pasture consumption on dairy farms **varies** considerably.

High **pasture consumption** is closely **associated** with high **profit**.

The objective of this manual is to assist dairy farmers to learn and implement the management strategies to achieve high pasture consumption.

2. Is pasture the cheapest feed?

Learning outcomes:

This chapter will help you to:

- Understand the costs of producing pasture.
- Calculate the cost of pasture production for your farm.
- Realise how the cost of pasture is affected greatly by pasture consumption.

Pasture is often claimed to be a cheap, if not the cheapest, feed for cows. Its cost varies greatly, just as the cost of any other feed does. Pasture might cost $20 to $150 per tonne; grain supplements might cost $100 to $300 per tonne. To determine the cost of pasture we first need to know what costs are associated with growing pasture.

2.1 Costs of pasture production

The costs of growing pasture can be categorised into variable, overhead, and capital costs.

2.1.1 Variable costs

Variable costs, some times referred to as the running or ongoing costs, are the costs that are directly associated with growing pasture. They change as you grow more pasture or change the pasture growing area. They include:

- **Fertiliser** (phosphorus, potassium, nitrogen, sulphur, etc) plus the costs of cartage and spreading.
- **Irrigation** water, water right and sales, pumping fuel or electricity.
- **Pest and weed** control, chemicals and application.
- **Fuel and oil** associated with pasture topping.
- **Fodder conservation**, including mowing, raking, baling, wrapping, carting in, sealing, and feeding out.

2.1.2 Overhead costs

Overhead costs of pasture do not vary much with the amount of pasture produced in a year. They include:

- **Repairs and maintenance** on machinery and structures associated with pasture management, such as tractors and implements, fences, and irrigation structures.

- **Pasture renovation** costs, such as seed and sowing, and any costs associated with cropping, where the crop is grown as a weed control measure.

The following overhead costs are sometimes attributed to pasture, but they are very difficult to quantify and allocate only to pasture production, so they have not been included in calculating the cost of pasture here:

- Labour associated with growing and grazing pasture, such as labour for irrigation, topping, pasture renovation, moving electric fences, and fodder conservation.
- Depreciation on machinery and structures associated with pasture management.

2.1.3 Capital costs

The major capital cost of growing pasture is the opportunity cost of having assets tied up in the land that grows the pasture. An interest rate of 10% could be applied to the value of the land, including all improvements. At this interest rate, land valued at $10,000 per hectare ($4,000 per acre) incurs an opportunity cost of $1,000 per hectare per year.

It is debatable whether to include the cost of land against pasture production. The cost of owning land is fixed and must be borne regardless of whether pasture is grown on the land or not; and a dairy enterprise cannot exist without some land on which to site the dairy and hold the cows.

You might allocate the cost of land against pasture production:

- When you want to compare it to the cost of leasing the land.
- When major capital works have been made on the land to grow and consume more pasture, such as laser grading, spray irrigation systems, water troughs and reticulation, and fencing.

The capital cost of owning land is not included in the cost of pasture calculation here.

2.2 Cost of pasture per hectare

The two sources of information to calculate the cost of pasture production per hectare are:

- A farm's tax return profit and loss statement.
- A list of quantities used and their price.

2.2.1 Cost of pasture from profit and loss statement

The profit and loss statement shown in Figure 2-1 is for an 80 hectare irrigated dairy farm, with a grazed area of 70 hectares. The remaining

10 hectares of land is under irrigation channels, laneways, sheds and houses, and tree plantations for shade and shelter. The farm milks 200 cows, and all young stock are grazed off the farm.

Figure 2-1: Profit and loss statement for an irrigated dairy farm

		INCOME	
		Milk Income	260,000
		Cattle Trading	1,500
		TOTAL INCOME	**261,500**
		EXPENSES	
Variable Costs	Feed Costs	Agistment	20,000
		Grain & Concentrates	40,000
		Hay Purchases	15,000
		Fertiliser	10,000
		Irrigation	9,000
		Fuel & Oil	1,500
		Fodder Conservation	3,500
		Weed & Pest	1,500
	Herd Costs		7,000
	Shed Costs		6,000
		Total Variable Expenses	**113,500**
Overhead costs		Administration	400
		Depreciation	10,000
		Insurance	10,000
		Labour	30,000
		Pasture Renovation	3,500
		Rates	2,800
		Repairs & Maintenance	9,500
		Subscriptions	500
		Total Overhead Expense	**66,700**
		TOTAL EXPENSES	**180,200**
		PROFIT	**81,300**

By adding up the costs associated with pasture production and then dividing by the grazing area, the cost per hectare of pasture can be calculated. Figure 2-2 shows the cost per hectare of pasture production, which works out for this farm to be $550 per hectare.

Figure 2-2: Cost of pasture per hectare calculation

Pasture production variable costs	Fertiliser	10,000
	Irrigation	9,000
	Fuel & Oil	1,500
	Fodder Conservation	3,500
	Weed & Pest Control	1,500
Pasture production overhead costs	Pasture Renovation	3,500
	Repairs & Maintenance	9,500
Total pasture costs		38,500
Area of pasture (ha)	(grazed, irrigated, fertilised area)	70 ha
Pasture costs per ha		**$550**

2.2.2 Cost of pasture from quantities used

Rather than using information from a profit and loss statement, you could use the quantities of different inputs and their prices to calculate the cost of pasture, using Figure 2-4.

2.3 Cost of pasture consumed

We have worked out the cost of growing a hectare of pasture (in this case, $550); but to compare feed costs, we need to work out the cost of a tonne of pasture. The cost of a tonne is calculated by:

- Dividing the **cost per hectare** by the number of **tonnes of pasture consumed,** on a dry matter basis per hectare (t DM/ ha).

The cost per tonne of pasture will depend greatly on how much pasture is consumed per hectare. Figure 2-3 shows that, as pasture consumption lifts from 5 up to 10 tonnes of dry matter per hectare, the price per tonne of dry matter consumed per hectare falls from $110 to $55.

Figure 2-3: The cost of a tonne of pasture, as pasture consumed per hectare changes

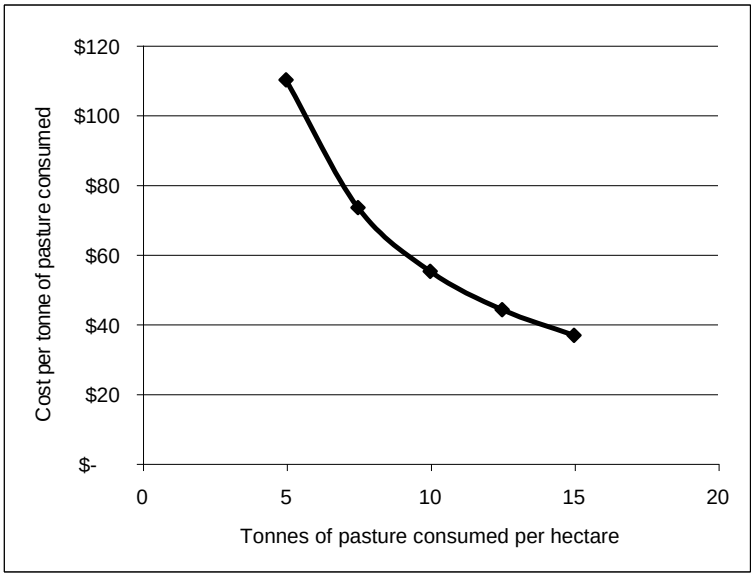
Pasture consumed (t DM/ ha)	5	7.5	10	12.5	15
Cost of pasture consumed ($/ t DM/ ha)	$110	$73	$55	$44	$37

Doubling pasture consumption per hectare, effectively halves the price per tonne of pasture consumed, as shown in Figure 2-5.

Figure 2-4: Calculating the cost of pasture from quantities used

Name:					Year					
Total farm area					Grazed area					
Irrigation	Wheel water		ML	X	$	/ ML	=	$		
	River water		ML	X	$	/ ML	=	$		
	Bore water		ML	X	$	/ ML	=	$		
	Other		ML	X	$	/ ML	=	$		
	Total irrigation costs								a	$
Fertiliser	Super, potash		t	X	$	/ t	=	$		
	Nitrogen		t	X	$	/ t	=	$		
	Lime		t	X	$	/ t	=	$		
	Gypsum		t	X	$	/ t	=	$		
	Spreading		t	X	$	/ t	=	$		
	Total fertiliser costs								b	$
Fodder consv'n	Hay 5x4 bales		bales	X	$	/ bale	=	$		
	Silage bales		bales	X	$	/ bale	=	$		
	Pit silage		t	X	$	/ t	=	$		
	Total fodder conservation costs								c	$
Weed & pest	Total costs								d	$
Fuel & oil	Topping, etc.								e	$
Pasture renov'n	Seeds, soil prep								f	$
Fodder crops	Seeds, soil prep								g	$
	Total pasture variable costs							(a+b+c+d+e+f+g)	h	$
	Total pasture variable costs / ha							(h ÷ Grazed Area)	i	$ / ha

Figure 2-5: Pasture cost per tonne decreasing as pasture consumption increases



2.4 Summary

Most costs of pasture consumption do not vary with the number of tonnes of pasture consumed per hectare.

Increasing pasture consumption greatly reduces the cost per tonne of pasture.

At low pasture consumption, pasture is not a cheap feed.

At high pasture consumption, pasture is the cheapest feed by far.

3. Pasture consumption

Learning outcomes:

This chapter will help you to:

- Calculate pasture consumption for your own farm.
- Calculate the value over a whole farm of increasing pasture consumption by 1 tonne per hectare.
- Be aware of achievable pasture consumption in each dairy region of Victoria.

3.1 Pasture growth, utilisation and consumption

Pasture growth is not easy to measure. Pasture is growing and dying all the time. We could measure pasture accumulation (in tonnes) if we measured paddocks pre- and post-grazing often enough, but it is not a very useful figure to help improve farm profitability, because pasture does not become milk, or money, unless eaten by cows.

Pasture utilisation is the proportion of pasture growth, expressed as a percentage (%), that is grazed or conserved as fodder. Utilisation can refer to a single grazing incident or to the accumulated utilisation over a year. Pasture utilisation on most dairy farms ranges from 50% to 85% of pasture grown. It is very difficult to achieve greater than 85% utilisation; and for reasons that will be covered later in this manual, higher utilisation may lead to lower overall consumption. Utilisation is not a very useful figure to help improve farm profitability, because we usually do not know what was grown anyway.

Pasture consumption is an estimate of the quantity (in tonnes) of pasture per hectare that is eaten by livestock or harvested as fodder per year. Consumption is the combination of growth and utilisation. Consumption can be estimated reasonably accurately and is a very useful tool to help improve farm profitability.

3.2 Calculating pasture consumption

Pasture consumption is calculated by:

- Estimating, from the milk fat produced, the **quantity of feed that must have been consumed** by the cows while milking and dry.
- **Subtracting** any feed that the cows might have **eaten while off the grazing area**.

- **Adding** what the **young stock must have eaten** from the grazing area.
- **Adding fodder conserved and not used** in that year.
- And, lastly, **subtracting any brought-in feed**.

This gives the total pasture consumed for the year from the farm. The final step is to:

- **Divide by the number of hectares milked off**, to give the pasture consumption per hectare.

The following is an outline how to use the worksheet in Figure 3-1 to calculate pasture consumed on your farm in kilograms of dry matter per hectare.

3.2.1 Estimate the feed consumed by cows during lactation and dry period

Over a full year, that is, lactation and dry period, it is assumed for each 1 kg of milk fat produced by a cow, 20 kg of dry matter must have been consumed.

So, annual milk fat production in kilograms is multiplied by 20 to give the total annual amount of feed eaten in kilograms of dry matter.

3.2.2 Subtract the feed eaten by dry cows grazed away from the farm

If the dry cows were grazed away from the farm, they consumed feed not grown on the farm, and this needs to be subtracted. It is assumed that the dry cows consumed 8 kg of dry matter per head per day while off the farm.

3.2.3 Add pasture consumed by the young stock at home

For each day the rising one-year-olds (calves) are on the farm, they eat on average 3 kg dry matter per head, and the rising two-year-olds eat on average 6 kg dry matter per head.

The amount of dry matter eaten by the young stock is added to the dry matter eaten by the milking cows.

3.2.4 Add pasture conserved but not fed out this year

Any pasture that was conserved this year as hay or silage on the farm but was either not fed out (still on hand at the end of the season) or was taken to a run-off block or was sold off the farm must be added. While calculating pasture consumption, to help with the quantities involved with hay, silage or concentrates use the information in section 3.5.

Figure 3-1: Pasture consumption per hectare calculation worksheet

Name: Season: Cows milked:

ESTIMATE PASTURE CONSUMED BY MILKERS

Annual Milk Fat		kg	X	20 kg DM	=	(a)
Dry Cows		head	X		days away x 8 kg DM	= (b)
Total feed consumed by milkers at home (a - b)					=	**(c)**

PLUS PASTURE CONSUMED BY YOUNG STOCK AT HOME

Rising 1 YO		head	X		days at home	X 3 kg DM	= (d)
Rising 2 YO		head	X		days at home	X 6 kg DM	= (e)
Total pasture consumed by young stock (d + e)						=	**(f)**

PLUS PASTURE THAT WAS CONSERVED ON FARM THIS YEAR BUT NOT USED ON FARM

Include fodder made on home farm this season that was sold, carried over, or fed to cattle off farm

Hay		tonnes	X	660	=	(g)
Silage		tonnes	X	300	=	(h)
Total pasture conserved on farm but not used on farm				**(g) + (h)**	=	**(i)**

LESS BROUGHT-IN FEED FED THIS YEAR

Include quantity brought onto farm and fodder reserves carried over from previous season but used this year

Grain or Pellets		tonnes as fed	X	1,000	=	(j)
Hay		tonnes as fed	X	660	=	(k)
Silage (Bale Pasture)		tonnes as fed	X	300	=	(l)
Silage (Other*)		tonnes as fed	X	*	=	(n)
Total brought-in feed (j+k+l+m+n)					=	**(o)**

EFFECTIVE MILKING AREA IN HECTARES

= **(p)**

CALCULATION OF PASTURE CONSUMED PER HECTARE

Total pasture consumed	=	(c+f+i-o)	=	**(q)**	kg DM
Pasture consumed/hectare	=	(q ÷ p)	=	**(r)**	kg DM/ha

*Select appropriate silage conversion factor: maize silage=300, wilted pit silage=260, direct-cut pit silage=155.

3.2.5 Subtract brought-in feed

Any feed that is brought onto the farm needs to be subtracted from the total dry matter consumed figure. This includes grain and pellets, for both the milkers and the young stock; purchased hay and silage; and feed that was harvested on the run-off area and brought to the farm.

If the feed was carried over from the last season and fed this season, it also needs to be included as a brought-in feed.

3.2.6 Divide by the effective milking area

The effective milking area is the area of the farm that is in productive pasture production and is grazed and fertilised (and irrigated on irrigation farms). It can be calculated from the title area less the area used for houses, sheds, laneways, shelter belts and tree plantations, dams and irrigations structures (including supply channels and easements, drains and on-farm storage).

3.3 Monitoring and comparing pasture consumption

Pasture consumption on Victorian dairy farms:

- Ranges from 3 tonnes to more than 14 tonnes of dry matter per hectare.
- Figure 3-2 shows region average and "achievable" pasture consumption for a number of districts in Victoria.

To get an indication of pasture consumption potential and improvement over time:

- **Monitor** pasture consumption from season to season.
- **Compare** with farms in your district, and across the state.

Figure 3-2: Average and "achievable" pasture consumption for a number of districts in Victoria

Region	Pasture consumption (t DM/ ha)	
	Average	"Achievable"
North East	4	6
Northern Irrigation	8 to 9	14
South West Victoria	5	8
South & West Gippsland	6	9
Macalister Irrigation District	8	12

3.4 The value of extra pasture consumption

On a dairy farm, assuming the current feeding strategy is already supplying feed to meet the current maintenance, pregnancy, production and condition requirements of the herd, any extra pasture

consumed will then be partitioned to either produce extra milk or increase body condition.

3.4.1 The value of one tonne

When a dairy herd **consumes one extra tonne** of pasture:

- If all that pasture was used for milk production, an **extra 2,000 litres** of milk would be produced.
- If some of the pasture, say 20%, was used to increase body condition, an **extra 1,600 litres** of milk would be produced.

At a milk price of 25 cents per litre, or $5.95 per kg milk fat equivalent, this extra milk is worth **$400 to $500**. In many cases, the farm is already growing this extra pasture, so there will be **little or no cost**, other than some time and labour (applied to grazing management only), in reaping the rewards of increasing pasture consumption.

3.4.2 The value of one tonne per hectare over the whole farm

The average **rainfed** Victorian dairy farm milks 175 cows on 105 hectares (VDIA, 1998/ 99).

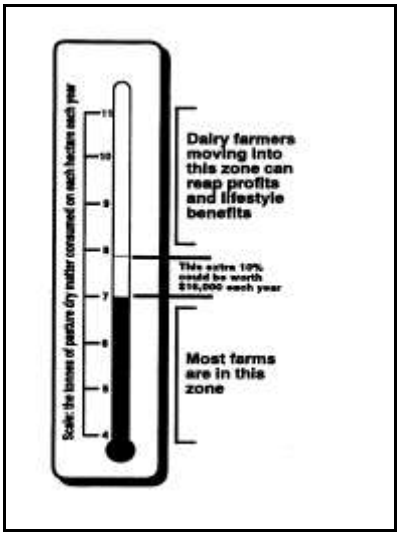
- Assuming 10% of the land area is used for sheds, house, laneways, and tree plantations and shelter belts, the average grazing area is 94.5 hectares.
- Consuming an extra tonne of pasture dry matter per grazed hectare could produce an extra 151,200 to 189,000 litres, depending on the proportion partitioned to condition.
- At 25 cents per litre this extra milk is worth between **$37,800 to $47,250** over the farm per year**, at little or no additional cost**!

The average **irrigated** Victorian dairy farm milks 190 cows on 85 hectares (VDIA, 1998/ 99).

- Assuming 10% of the land area is used for sheds, house, laneways, and tree plantations and shelter belts, the average grazing area is 76.5 hectares.
- Consuming an extra tonne of pasture dry matter per grazed hectare could produce an extra 122,400 to 153,000 litres, depending on the proportion partitioned to condition.
- At 22 cents per litre this extra milk is worth between **$30,600 to $38,250** over the farm per year, **at little or no additional cost**!

Figure 3-3 shows a diagram of a barometer used at the beginning of the Target 10 program, in 1993. It shows the value of increasing the pasture consumption on a typical farm at the time, from 7 tonne to 7.7 tonne, that is by 10%. The 10% was where Target 10 got its name. That increase was considered to be worth about $16,000. From the calculations above, it is worth a lot more now, and yet the cost of good grazing management probably has not increased very much.

Figure 3-3: The 1993 Target 10 barometer



3.5 Feed conversion tables

Figure 3-4 can be used to calculate the total tonnes "as fed" (with the moisture in it) of various size bales and types of hay and silage.

Figure 3-4: Tonnes "as fed" from various amounts of hay or silage

Hay	Wet weight (tonnes as fed) A	No. of bales B	Total tonnes of hay (as fed) C=AxB
4 x 4 round	0.25		
5 x 4 round	0.35		
5 x 6 round	0.50		
8 x 3 x 3 square	0.30		
8 x 4 x 3 square	0.60		
8 x 4 x 4 square	0.76		

Silage	Wet weight (tonnes as fed) A	No. of bales or cubic metres B	Total tonnes of silage (as fed) C=AxB
4 x 4 round	0.70		
5 x 4 round	0.90		
1 cubic metre (wilted)	0.58		
1 cubic m (direct cut)	0.83		
1 cubic m maize silage	0.50		
Other			

Any feed other than pasture is converted to a pasture equivalent by taking into account the dry matter and the energy or feed value relative to pasture. Multiplying the tonnes of feed as fed by a conversion factor allows you to quickly convert the feed to tonnes of "pasture-equivalent" feed.

Figure 3-5 shows as-fed weights, average dry matter percentages and weights, average energy (MJ ME) levels, conversion factors and pasture dry matter equivalents for a range of hay and silage bale sizes, pit silage and grain.

The conversion factor in the table was calculated as follows:

(DM % of feed ÷ 100) x (MJ ME feed ÷ MJ ME pasture) ÷ 1,000

Figure 3-5: Wet weights, dry matter percentages and pasture dry matter equivalents for various feeds

FEED	Wet weight (kg as fed)	Dry matter (%)	Dry weight (kg DM per bale)	Energy (MJME / kg DM)	Conversion factor	Pasture equivalent per bale or cubic metre (kg DM)
Hay						
4 x 4 round	250	85%	213	8.5	**660**	165
5 x 4 round	350	85%	298	8.5	**660**	230
5 x 6 round	500	85%	425	8.5	**660**	330
8 x 3 x 3 square	300	85%	255	8.5	**660**	200
8 x 4 x 3 square	600	85%	510	8.5	**660**	395
8 x 4 x 4 square	755	85%	642	8.5	**660**	500
Silage						
4 x 4 round	700	35%	245	9.5	**300**	210
5 x 4 round	900	35%	315	9.5	**300**	270
1 cubic metre (wilted)	580	30%	174	9.5	**300**	175
1 cubic m (direct cut)	830	18%	149	9.5	**155**	130
1 cubic m maize silage	500	35%	175	10	**320**	160
Grain & Pellets per tonne	1,000	90%	900	12	**1,000**	1,000

3.6 Summary

Pasture consumption is calculated backwards from estimating the quantity of feed that must have been consumed by livestock over the year, less brought in feed, plus conserved fodder remaining at the end of the season.

The **average pasture consumption is 2 to 4 tonnes below the achievable** pasture consumption in all regions of Victoria.

The total extra income from achieving **one extra tonne of pasture consumed per hectare** is:

- $30,600 to $**38,250** for the average Victorian **irrigated** dairy farm.
- $37,800 to $**47,250** for the average Victorian **dryland** dairy farm.