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CHANGING FARMER PERCEPTIONS AND PROFITABILITY ON IRRIGATED DAIRY FARMS IN VICTORIA BY IMPROVING PASTURE GROWTH AND UTILISATION EFFICIENCY

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Abstract

Much research has been conducted into finding ways to both improve and measure the profitability of dairy farms, yet in Victoria Australia at least, the latest Dairy Farm Monitor report shows no improvement in farm EBIT over the past decade. In fact in Victoria, one of our two demonstration farms has announced it will close this year; the second made a loss during and since the record milk price year, and has advised it needs financial assistance to continue. However there are some farms that have increased both Margin Over All Feed Costs (MOAF) and Earnings Before interest & Tax (EBIT) substantially over the past 3 to 4 years, despite declining milk prices. This poster provides information on those farms, and describes the 'FOO' technologies and pasture management used to achieve this.

These improvements have only been possible because the farmers involved consciously made the decision to change (and/or outsource) their grazing management practises in order to optimise their own pasture and its quality. The system used is based around the Lincoln University Dairy Farm (LUDF) 'golf-ball grazing' system, modified for Australian conditions. Making that decision was difficult enough for many of the farmers; the discipline involved in adopting the changes has for some been very much harder.

It is the authors' view that getting the farmer to change his or her perception of how the farm needs to be managed is the biggest barrier to improving profitability. It is human nature for many of us to try the same unsatisfactory but familiar methods over and over again, rather than set out on a new and sometimes frighteningly different course, with all the associated fears of financial ruin. This poster presents the different aspects of the FOO system currently used by nine irrigated dairy farms in the MacAlister Irrigation District (MID) of East Gippsland, Victoria, and examples of the results achieved.

Introduction

The challenge of simultaneously increasing production (KgMS/ha) and lowering costs to increase profitability

The 2014 Regional Wellbeing survey by The University of Canberra found that just under half of dairy farmers are profitable, and another 20% are just covering costs. And I am told the situation in New Zealand is even worse! How do we achieve higher production and lower costs? High MS/Ha requires a high cow energy intake. There are two routes to achieving high

energy intakes. One is to obtain the necessary ME by purchasing in energy dense supplements (the red route in Fig.1). The LUDF system (the green route) uses high quality pastures, managed well, to ensure a high energy input at very low cost. To take the green route alone requires a very high quality pasture sward, with excellent irrigation systems.

These two things simply do not exist in the MID, so I have developed a mix of the two. Every farmer client has had significant grain inputs in the past, and reducing those overnight would have had serious consequences. When I first say to a prospective client that I can reduce grain inputs and increase production (outputs), most simply do not believe me. But this is exactly what happens when you improve pasture quality and management through weekly monitoring of pasture growth and residuals.

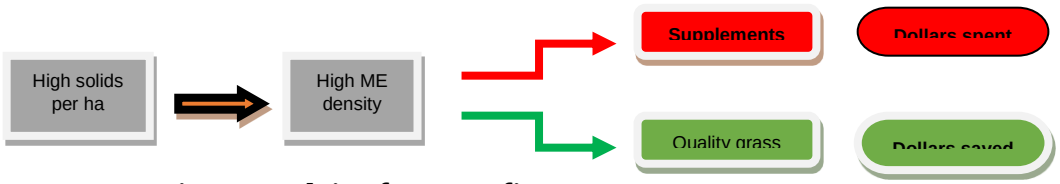

Fig. 1. Routes to increase dairy farm profit.

What we do at FOO

Pasture management, which has been shown by LUDF to be the main driver of their profitability (and that of many other farms), is ironically something surprisingly few farmers pay much attention to. I see this repeatedly in the typical answers I get to my questionnaire when interviewing farmers. I am convinced that *any* farmer can improve his pasture management system, even if it means out-sourcing that responsibility. But first they have to *accept that change will be necessary.* Without a change to the basic pasture management in place on the farm, no change can be expected in how much of that pasture *is consumed*.

Table 2 gives an insight into what changes are needed – and there are many. If a farmer decides he wants to improve pasture intakes and therefore profitability, he has to (1) change the pasture allocation process, (2) adjust stocking rates (usually over time), (3) monitor grazing residuals and (4) put some *science around the decision to feed supplements*, after calculating the dry matter (DM) and metabolisable energy (ME) available from the pasture.

Most farmers *think* that these will be hard things to do, and therefore for many it is easier not to do them, or more correctly they *think* it is easier not to do them. Most of them initially *think* that it is not possible to farm any better than they already do. They *think* that it is just *not possible* to reduce supple-ments and increase outputs. My job is to convince them that this is not true.

We do this by introducing the 'FOO' 6-step regime, comprising-

(1) weekly measurement of DM in *all* paddocks

(2) sampling the paddock to be grazed on the day of measurement for feed quality: Metabolisable Energy (ME), Neutral Detergent Fibre (NDF), Protein & Dry Matter (DM),

(3) using this data to allocate pastures *(and any supplements if necessary)* for the following 7 days based on grazing to a 1500 residual (an example is shown in Table 4)

(4) residuals (from grazings the previous week) are monitored and I back calculate the wastage value where residuals have not been achieved. Based on this result we can see how much bought in supplements were fed for the previous week that were not needed.

(5) if paddocks start to get "ugly" from poor residuals, I have them pre-topped the next round. At the end of the first three months, using data from other farms with similar numbers, I can project annual pasture tonnages and growth splits by season allowing me to adjust calving dates and stocking rates going forward.

(6) I re-motivate my farmers every week by presenting their major indicators for the week, comparing them with my other clients (all allow this) and their own position the year before. It works. It is very intensive, I am essentially the pasture manager for nine farms simultaneously, measuring some 25,000 paddocks per year.

We are also in the process of implementing a system to measure and monitor soil moisture levels weekly *(every paddock)* with a tow-behind electromagnetic array (Geonics EM38 Mk2, as shown in Photo 2.

Photo 1. Geonics WM38 Mk 2 tow-behind electromagnetic moisture measurement in action. An example of a farm soil moisture map thus produced is shown in Fig. 2.

Some initial results

The improvements in pasture quality and profitability on the farms where the farmer has bought into *doing something* about improving profitability have been dramatic. Table 4 summarises a feed allo-cation plan (1) to (3) above.

As a baseline, Table 1 shows the production, stocking rate, supplements used and margins made over the last 4 years for the clients of Phillipsons' Accountants in Sale, Victoria, and compares this with my 3 clients (the three 'FOO Farms') that have been operating under my system for 3 of those 4 years. Provided that pasture management is maintained at high levels, there is a direct relationship be-tween increasing stocking rate, increasing production and increasing margin on both groups of farms. Essentially if the rate of stocking rate is doubled, then in my experience the MS/Ha and profit mar-gin increase at the same rate.

Table 1. Comparison of 'FOO' farms with baseline farms (Phillipson's accountancy data).

FOO Farms - Gippsland			
Financial Year	**12_13**	**13_14**	**14_15**
Farm "M"	1670	2241	2218
Farm "R"	1418	1674	1719
Farm "S"	1260	1324	1419
Ms/ha	1449	1746	1785
		120%	**102%**
			123%
$/KG MS	$ 4.75	$ 6.62	$ 5.88
Income/Ha	$ 6,884	$ 11,561	$ 10,498
Stocking Rate	**12_13**	**13_14**	**14_15**
Farm "M"	4.01	4.37	4.5
Farm "R"	3.1	3.5	3.5
Farm "S"	2.73	2.79	2.92
	3.3	3.6	3.6
		108%	**102%**
			111%
Supplements (t/cow)	**12_13**	**13_14**	**14_15**
Farm "M"	2.55	2.73	2.63
Farm "R"	1.87	2.05	1.78
Farm "S"	2.07	1.82	1.98
Average	2.16	2.20	2.13
		102%	**97%**
			98%
	12_13	**13_14**	**14_15**
Supplement $ per tonne	$356	$403	$419
Supplement $/ha	$ 2,526	$ 3,150	$ 3,249
Margin/Ha	$ 4,358	$ 8,410	$ 7,249
		193%	**86%**
			166%

Phillipsons Data				
Financial Year	**11_12**	**12_13**	**13_14**	**14_15**
Number of farms	73	75	49	25
Ms/Ha	1225	1240	1203	1304
		101%	**97%**	**108%**
				106%
	$ 5.48	$ 4.90	$ 6.61	$ 5.95
	$ 6,713	$ 6,076	$ 7,952	$ 7,759
	11_12	**12_13**	**13_14**	**14_15**
Stocking Rate	2.7	2.8	2.5	2.8
		107%	**90%**	**109%**
				104%
	11_12	**12_13**	**13_14**	**14_15**
Supplement $/ha	$ 2,614	$ 2,906	$ 3,266	$ 3,282
Margin/Ha	$ 4,099	$ 3,170	$ 4,686	$ 4,477
		77%	**148%**	**96%**
				109%

Note: the improving kgMS/ha production of the first three farms to have adopted the system, over the last 3 years, and the trend for decreasing supplements fed over time. Farm M" for example has increased production by over 500MS/ha and fed only marginally more solids. Farms R & S by comparison have achieved increases of approximately 300 and 200 kg MS/ha respectively while reducing supplements.

Making the decision to change – challenging the farmer

FOO has a list of questions of farmers before they are accepted as a client (Table 2). It is used to determine how much attention or priority they place on pasture management, and it shows where change needs to be made. Often farmers will decide they don't want to change all or some of these things – so they are not taken on as a client.

T**able 2**. The list of questions FOO asks prospective clients

Pasture Management Question	Typical Answer	Change Needed	Reason for Change
Who gets cows (checks pasture consumption)	Worker	Yes	Head in sand mentatlity - going forward residuals measured benchmarked
Do you have day/night paddocks	Yes	Yes	Spreads fertility and ensures highest cover grazed first
Do you return cows to same paddocks to graze out	No	Yes	Can be necessary to obtain residuals
Who allocates paddocks	Worker	Yes	Measurements decide which paddock and how many feeds
is rotation method fixed	Yes	Yes	Based on growth rate to conserve and plan for cover over year
Average paddock size	>4 Ha	Yes	Smaller paddocks easier to control utilisation
Is winter milk incentive paid	Yes	Yes	Usually means stocking rate does not match grass production rate
Do you top	no	Yes	Necessary in early days when stocking rate not matched to growth
Quantity of silage made from the farm	Lots	Yes	Usually means stocking rate does not match grass production rate
Stocking rate	<3	Yes	Usually low - and needs to be increased to drive DMI
BCS or weighing	No	Yes	Low BCS cows equal low production cows - 80% feed/20% breed.

Keeping the farmer motivated once he is on board

Motivating weekly is important, but it is also important to look back at yearly improvements. Table 3 shows the pasture quality results for another client, Farm L, showing the feed test results for their first month on the system versus the same month (December) 12 months later. The pasture ME is 0.6 higher and NDF 4.3 lower. After taking into account an NDF limit of say 7.5 kg/cow/day, this calculates as follows;

2014: Available ME is (7.5/52.9) x11.2 = 158 ME per cow per day

2015: Available ME is (7.5/48.6) x 11.8 = 182 ME per cow per day – an increase of 25 ME or about 2 kg of grain per cow per day less is needed.

– which for this farmer with 600 cows is a benefit of approximately $420 per day.

Table 3. The first-year improvement in pasture quality results for Farm L.

Farm L Result	2015 December	2016 December
ME	11.2	11.8
NDF	52.9	48.6
Protein	19.8	18.2
DM	18.6	21.4

Control of residuals is extremely important if clients are to achieve the objectives. Good residuals means;

1) No wastage of pasture grown – which have been fertilised and maybe watered – all costing money,
2) Means all the re-growth in the next rotation is green and leafy with the highest possible ME and lowest possible NDF values.

Photo 2: Example of residuals on Farm M - no clumps, approx. 1500 kg DM/ha.

Creating a farm feed allocation plan

Allocating cows to paddocks to achieve both production goals and residuals (therefore utilisation) is at the heart of how the information is used to create profit. Currently this is done in a simple Excel spreadsheet with a more sophisticated system on the drawing boards.

Day	Date		Cow Number	Total Daily Required Intake (ME)	Supplements Fed (ME) per milking	Grass Needed KG DM per milking	Paddock Number	Grazings/ paddock	Silage (580kg Bales per milking)	Grain in shed per cow	Comments
Sat	30/01/2016	Day	460	122.9	31.9	7.8	31	1.0	2	3.0	
Sat	30/01/2016	Night	460	122.9	31.9	7.8	32	1.0	2	3.0	pre top
Sun	31/01/2016	Day	460	122.9	31.9	7.8	25	1.1	2	3.0	
Sun	31/01/2016	Night	460	122.9	31.9	7.8	35	1.0	2	3.0	
Mon	1/02/2016	Day	460	122.9	31.9	7.8	2a	2.0	2	3.0	pre top
Mon	1/02/2016	Night	460	122.9	31.9	7.8	2a	2.0	2	3.0	
Tue	2/02/2016	Day	460	122.9	18.9	9.0	19b	1.2	0	3.0	can graze 17 on way over the road
Tue	2/02/2016	Night	460	122.9	18.9	9.0	23	1.2	0	3.0	
Wed	3/02/2016	Day	460	122.9	18.9	9.0	19d	1.0	0	3.0	can graze 17 on way over the road
Wed	3/02/2016	Night	460	122.9	18.9	9.0	4a	0.6	0	3.0	plus 4b
Thu	4/02/2016	Day	460	122.9	18.9	9.0	15	1.1	0	3.0	check paddock 2b for nitrates - due to be fed tomorrow
Thu	4/02/2016	Night	460	122.9	38.4	7.3	21	0.7	3	3.0	plus what is left of 10
Fri	5/02/2016	Day	460	122.9	18.9	9.0	2b	1.0	0	3.0	nitrates ??
Fri	5/02/2016	Night	460	122.9	31.9	7.8	12	2.0	2	3.0	
Sat 2	6/02/2016	Day	460	122.9	31.9	7.8	18a	0.5	2	3.0	plus 18b
Sat 2	6/02/2016	Night	460	122.9	31.9	7.8	12	2.0	2	3.0	
Total			460			16.5	Kg DM (Past)/cow/day			Targets>	
						7571	Kg DM day				
			Rotation	23	days						
			Ha	164							
				50	Ha/week						

Table 4: The feed allocation plan for Farm S for the first week of February this year.

Table 5 gives an example of the results in relation to the improving residual performance (via stocking rate increase) on the farm that has been following the system the longest (4 years). The data in the table is the area of the farm each year that is measured as being below 1600 kg DM. This is calculated as: Area measured below 1600 each week (ha) / farm size (ha)
It is normal for farms first starting to have *no paddocks* that are grazed down to even 1600, so therefore their residual performance achievement is 0%.
This farm represents a doubling of their hectares grazed below 1600 over a four year period, which means less substitution of pastures to supplements.

Table 5: Area grazed to below 1600 kgDM/ha by year.

Financial Year	2011-12	2012-13	2013-14	2014-15
Farm M	8.7%	13.2%	13.5%	16.5%

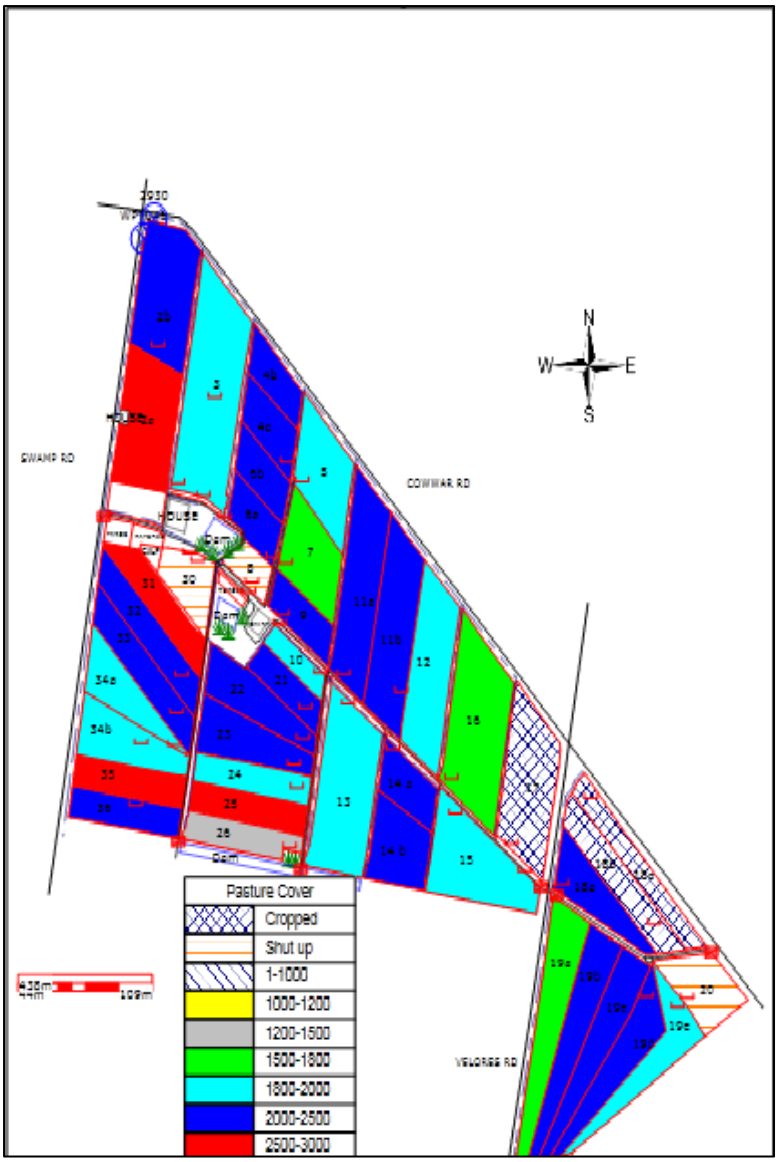

Figure 2. Farm map showing the cover on Farm S for the first week of February, derived using the Geonic WM38 Mk 2 tow-behind shown in Photo 1.

Conclusions

Every single farmer in my group has at one time or another, raised objections or procrastinated at implementing some of the changes. However it is clear to me is that any farmer can make massive improvements to their margins. The only thing in the way is the farmer himself or herself. Only once he/she has decided that the opportunity is real can the decision be made to take it. It is hard initially, but the rewards are great.

Acknowledgements

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