Macalister Demonstration Farm

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NEWSLETTER 52

Monday June 27th 2011

Extension projects at the MDF are funded by Dairy Australia, Sustainability Victoria and Department of Agriculture, Fisheries and Forestry, with support from GippsDairy.

Assessment of Refrigeration Heat Recovery to Improve Cooling Efficiency and Reduce Hot Water Costs

Come and hear about how the new heat recovery unit is working and what savings are being made.

Is it worth the investment? Are the savings real?

Macalister Demonstration Farm, boggy Creek Rd, Riverslea

Tuesday 5th July, 2011 at 11am

BBQ lunch provided. Further information: Neil Baker on 0488 175 366 or neilbaker@aapt.net.au

Thank You UDV

The Number 19 District Council of the United Dairyfarmers of Victoria has generously donated a data projector to the MDF to support its workshop and field day presentations.
The money was provided from a fund specifically set aside to support educational purposes.

The MDF is now making the data projector available for use by other community groups with links to the dairy industry.
Just contact Neil Baker to book, arrange pick up and instruction - 0488 175 366 or neilbaker@aapt.net.au

Yellow Rag Bit

Bree Walshe, Dairy Advisor DPI Maffra

Are there risks of wintering dry cows on potentially more green grass this winter?

Many of you will be in an enviable position, especially compared to the wet parts of the state – that you may be fortunate enough to winter your dry cows on grass, as opposed to mud!

What are some considerations that you may need to ponder when you send your dry cows out for the winter?

The aim of feeding a dairy cow, no matter what stage of her life, lactation or the season is consistency. Consistent intake enables her to have a stable rumen bug population, after all these microbes are what generates our milk production. One of the risks associated with most dry cows' diets is feast and famine. Where possible strip graze the drys, offer the supplement/fodder daily – or if they are set stocked check them every couple of days to ensure they haven't feasted and are now in famine!

Cow liveweight kg	Energy requirement (MJ) for maintenance and pregnancy	Feed Type	ME MJ / kg DM	CP%	NDF %	Total kg DM /day/cow to meet her total energy needs
450	70	Pasture – lush	11	17	40	7
		- dry	7	10	50	10
		Hay – pasture	8.5	9	60	8.5
		- cereal	8.8	7	56	8
		Silage – good	10	16	49	7
		- poor	8	10	60	8.8
550	80	Pasture – lush	11	17	40	8
		- dry	7	10	50	11.5
		Hay – pasture	8.5	9	60	9.5
		- cereal	8.8	7	56	9.2
		Silage – good	10	16	49	8.1
		- poor	8	10	60	10
650	100	Pasture – lush	11	17	40	10
		- dry	7	10	50	14.5
		Hay – pasture	8.5	9	60	11.7
		- cereal	8.8	7	56	11.5
		Silage – good	10	16	49	10
		- poor	8	10	60	12.5

Note: The above pasture, hay and silage values were based on FeedTest averages.

The dry cows may be exposed to better quality grass than in previous years and we need to be aware of the potential implications that this may have:

- Weight gain – if you require the dry cows to gain 0.5 to 1 BCS, then this will be welcomed!
- Over conditioned cows (body condition score (BCS) 5.5+) – cows that were dried off in the ideal BCS, may become too fat, leading to increased metabolic illnesses (milk fever, displaced abomasums, mastitis, retained foetal membranes and fatty liver)
- Transitioning the cows from gestation to lactation – the importance of a transition cow diet may be increased this year, due to the high pasture content in their diet. A ration that promotes both calcium to be released from the bones into the bloodstream and adapting the rumen to concentrates is recommended.

However, underfeeding will cause reduced body condition and if severely restricted she may get pregnancy toxaemia.

The importance of calcium

Calcium is stored in the bones and is necessary for muscles to function properly. Once she calves her requirement increases enormously due to the large quantites needed for colostrum. If excess calcium is fed prior to calving, the cows efficiency to draw calcium from her bones is reduced. Lush green pasture naturally contains a higher level of calcium, than your traditional dry cow pasture (over matured, stalky pasture). Therefore, it is recommended that lush pasture is minimised during the transitional period.

How can we reduce the risk of these metabolic illnesses:

- Milk fever - is a metabolic disease caused by a low blood calcium level (hypocalcaemia). About 80% of cases occur within one day of calving, due to milk and colostrum production draining calcium (and other substances) from the bloodstream, where the cow cannot replace the calcium quickly enough.
- Retained foetal membranes – has also been associated with low blood calcium at calving
- Left Displaced Abomasum (LDA's) – may be linked to a lack of calcium in the bloodstream at calving and/or reduced rumen capacity due to the calf. If we can maintain a rumen that is as big as possible, then the risks may be minimised. Fodder such as hay is a good option to help keep the rumen as stretched as possible as it is bulky, unlike green pasture. Keeping her appetite up and rumen functioning, as we want a consistent diet i.e transition the cows well.

Transitioning the cows – key considerations

- Restrict calcium intake of the cows, to promote calcium mobilisation (anionic salts are used for this purpose) However, once calved it is strongly recommended that she receives a calcium supplement (e.g limestone) to help combat the huge losses in milk production & colostrum.
- Anionic salts – may help to slightly acidify the bloodstream, aiding in releasing calcium from the bones to the bloodstream.

- Avoid pastures, silage and hay high in Potassium (K) or Sodium (Na), as these cations greatly reduce the effect of anionic salts. Molasses (high in K) and bicarb (high in Na) should also be avoided.
- Magnesium is required for calcium absorption, so a magnesium supplement will assist with this – magnesium chloride, magnesium sulphate, magnesium oxide.
- Adapt the rumen - you can introduce the grain component of the milker ration to the dry cows, but do not feed bicarb in the ration. Once the cows have calved bicarb may be introduced. Lead feed pellets containing anionic salts and relevant minerals are available from most feed manufacturers and can provide a convenient option.

Please note, the dry cow period in this article refers to the time the cow was dried off, up until two to three weeks before calving and the transition period refers to two to three weeks before the calving date and two to three weeks post calving.

For further advice on managing the nutritional requirements of your dry cows please consult your nutritional advisor, for extra information and advice on potential metabolic issues please consult your veterinarian. For general enquiries please call your DPI dairy extension officer on 5147 0800.

Macalister Demonstration Farm Profitability Project & Ten day Tracker Project

A year ago, in this newsletter, a couple of interesting graphs from the Tracker analysis were shown and discussed. Now, another year of data has been collected and analysed from farms in the Macalister Irrigation District. Because the same trends are apparent, and the issues so important, the graphs for this season, 2010-2011, are shown below and discussed.

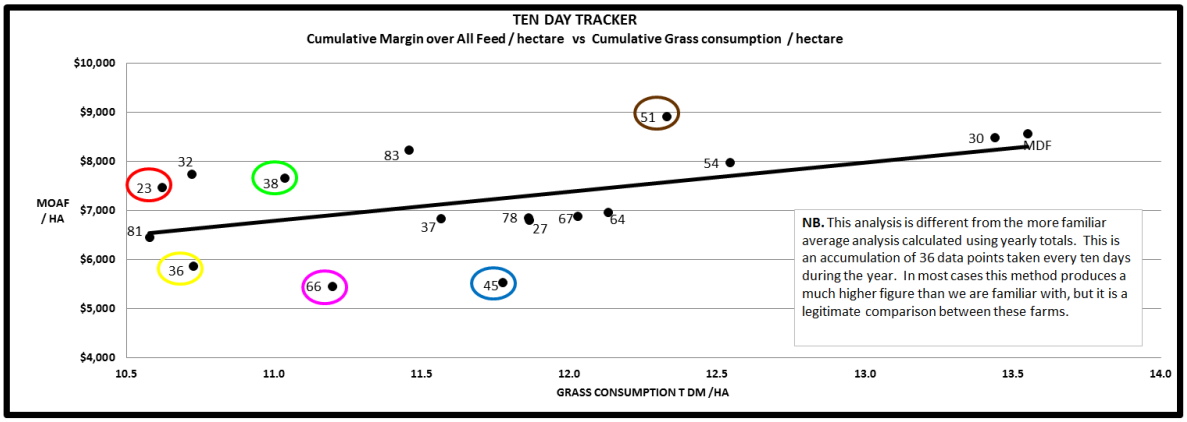
On our grass based farms, the two production issues that have the major effect on feeding profitability are:

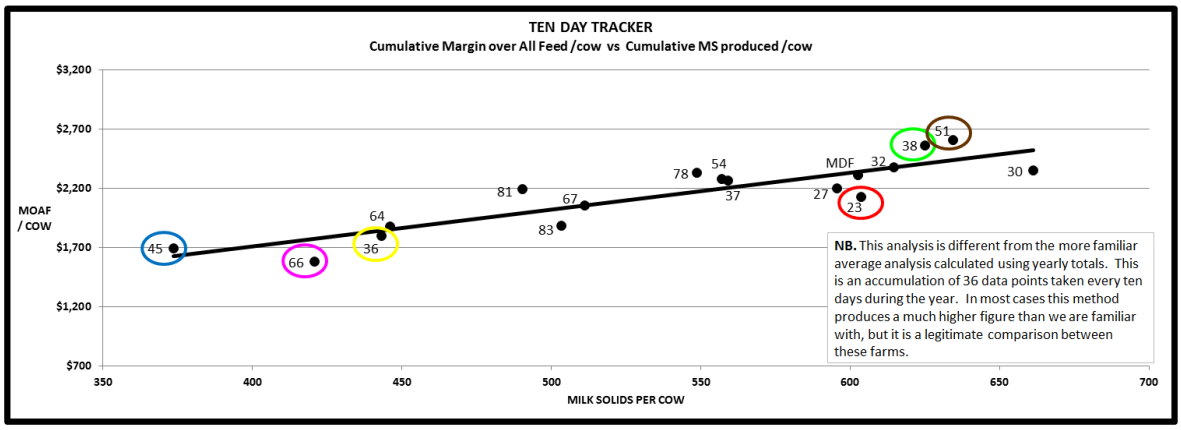
1. Grass produced per hectare, because this indicator is a major controller of the **feed price** and the dilution of the cost of the hectare.
2. Milk produced per cow, because this indicator is a major controller of **feed conversion efficiency** and the dilution of the cost of the herd.

Is it worth spending more money on inputs to get higher grass production per hectare, and higher milk per cow? Does spending more money achieve a higher financial margin? The answer for the Tracker group seems to be, "yes…. usually".

The Tracker calculates grass consumption per hectare, milk solids per cow, and the feed financial margins for each farm every ten days. The cumulative margins, shown in the graphs, add up all of these 36 margins for the year. In this analysis, the production per hectare and per cow seem high because they are calculated on only the hectares being grazed by milkers, and only on cows being milked at the time, with no dry-cow period included. However, the method is applied to all farms so the comparison is a reasonable one.

The lines in the two graphs clearly show a general trend, that more grass consumption per hectare AND more milk per cow, achieve greater margins.





To get the range of margins in perspective, if farm 51 and farm 66 were both milking 300 cows, farm 51 would have $782,400 left over after paying for all feed (including all costs to grow grass and buying supplements), while farm 66 would have $473,700 – same number of cows, but a $308,700 difference.

Although the graphs show the trend that higher production delivers a higher margin, **it doesn't work for all farmers**. To illustrate, in the top graph, compare farm 64 and farm 38. Farm 64 has higher grass consumption than farm 38, but gets a lower margin. There are many possible reasons, but some could be:

- Farm 64 may not be set up as well, for example, it needs to apply a lot more Phosphorus.
- Farm 64 may be paying higher prices for fertiliser or irrigation water.
- Farm 64 may be getting a lower price for milk, because it's a smaller farm, or its milk solids are relatively low in protein.
- Maybe farm 64 is wasting more feed or fertiliser –for example, with poor ration balance or not applying fertiliser uniformly.

As well as the above reasons for the varying margins, the two graphs show another interesting relationship (which was also apparent last year) on most, but not all farms, between milk production per cow and grass consumed per hectare.

- In the top graph, Farms 23, 38 and 51 (red, green and brown circles) are well **above** the trend line, that is, they achieve very good margins in relation to their pasture consumptions. Note that these farms are well to the right in the bottom graph, that is, having high milk per cow. It seems to be showing that they are using their amount of grass consumed very efficiently with high producing cows.
- In the top graph, Farms 36, 66 and 45 (yellow, purple and blue circles) are well **below** the trend line, that is, getting low margins in relation to their pasture consumptions. Note that these farms are well to **left** in the bottom graph, that is, having low milk per cow. It seems to be showing that they are not using their amount of grass consumed very efficiently, with low producing cows.

Farm 51, the farm with the highest margin per cow and per hectare (which happens to be the farm that had the highest margins last year), shows what high milk production per cow, coupled with good grass consumption per hectare, can do. The Tracker has been funded by GippsDairy for two years. This funding is finishing so the Tracker will now become a paid for service, available to anyone.

Frank Tyndall 0409 940 782

EMISSIONS REDUCTION STRATEGY AT THE MDF

In May 2009 the MDF made a successful application for a project to undertake a carbon emissions audit of the farm as a case study. The project is known as the 'Carbon Ready Dairy Demonstration' and identified the source and size of carbon emissions generated by normal operations. This information has then been used to develop a Carbon Emissions Reduction Plan that includes strategies to minimise and offset carbon emissions and an analysis of the financial impact of the plan on the farm business.

The emissions reduction strategy proposed for the MDF is based on a number of key elements:

- The initial target is for a 5% reduction in farm emissions, consistent with the Australian government commitment for a 5% reduction in emissions by 2020, but opportunities for good and strategic investments that reduce emissions further will not be ignored;

- Because agriculture will not be in any carbon trading scheme the key priority is to minimise cost rises in the areas that will be impacted by the scheme. These are chemicals, fertilizer, transport and electricity. While the anticipated increases are not large (a total of $16,000 per year on a turnover of $850,000 at a carbon price of $20/t CO_2-eq) they will come straight off the bottom line.
- Because of uncertainty moving into a carbon restrained economy, a medium term view has been taken with a payback target for any investment at five years. Investments that have a longer payback period have been considered in the light of other incentives or cross subsidies to bring the payback period back to five years;
- The strategy considered a combination of emissions reduction actions and emissions offsets for greatest flexibility;
- The risk in investing in the Carbon Farming Initiative is seen as too high when other lower risk actions are available.

The plan to reduce carbon emissions at the MDF is as follows:

	Adjusted capital cost (Less incentives & RECs) $ (excl. GST)	**Payback period Yrs**	**Emissions saved tCO_2-eq/yr**	**% of farm emissions saved**
1. Improve insulation of HWS at the base	$50	0.3	2	0.1
2. Improved plate cooler performance with new pump	$1,800	2.1	7.75	0.15
3. Heat recovery unit	$6,800	2.9	17.7	0.9
4. Solar electricity at one pump site – 1.5 kW as long as the **premium** feed-in tariff can be accessed.	$7,370	4.7	3.1	0.2
5. Solar HWS	$17,190	6.2	34.0	1.7
6. Renewable energy from electricity retailer when price difference is 3.5c/kWhr	0	0	108.8	5.4

The highest priority investments, even though the emissions savings are low, are those that are the easiest and least expensive and that also have milk quality benefits.

The heat recovery unit is seen as a less expensive option to reducing water heating emissions than the more expensive warm water wash system. If we were building a new dairy and the price of the wash unit comes down we should consider it as an option but in an established dairy there is little incentive at the price for both the electricity cost savings and emission savings.

The solar electricity array at a pump site saves little in emissions but by accessing the feed-in tariff it generates a significant saving in power costs that can be used to cross-subsidise more expensive actions like the installation of solar hot water at the dairy. This is a key to a strategic approach – whilst the focus is on emissions reduction, any investment must improve or at least maintain the viability of the business. This action has the added benefit that once access to the feed-in tariff has been approved extra panels can be purchased and added to the system (up to 5kW) at any time and still access the higher tariff and further reduce emissions (up to 2.2% of total farm emissions).

Investment in solar hot water is recommended because it is a known technology that easily integrates into our current system. This is also an important element of this strategy – we don't like surprises! It is a low cost investment for each tonne of emissions reduction and represents good value from an environmental point of view.

One of the greatest challenges faced by all businesses is to control costs. Because renewable energy will not be subject to any carbon tax or carbon permit costs it will not be affected by any trading schemes, other than perhaps to come down in

price as it becomes more mainstream. By choosing renewable energy at the time when the difference in price between renewable and non-renewable power is closer together we will effectively cap the impact of any carbon scheme on electricity costs. This generates greater financial certainty and lower risk as we move into an unknown future.

This strategy achieves a total farm emission reduction of 8.45%, in excess of the national target. Whilst all of these actions reduce emissions, they also generate cost savings that means that an investment in the next 18 months will have them all paid for by the 2020 target date.

Any further reduction in carbon emissions come at considerably greater cost with longer payback periods. We consider it wise to wait for the development of rumen modifying actions that can reduce methane emissions, and additives to urea to reduce breakdown to nitrous oxide as the next big step in emissions reduction. In the meantime, we will continue to feed our cows well and use best-management practices for fertilizer application to minimise our emissions.

Would you like a copy of the Carbon Emissions Reduction Plan to get the full story? Contact Neil Baker on 0488 175 366 or neilbaker@aapt.net.au.

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IT'S TIME TO CELEBRATE!

Did you notice that we have now passed the 50th issue of the Newsletter?

That's nearly three years!

Did you read the 250th MDF Weekly Report in the Gippsland Times and on Ausdairy-L?

That's nearly five years!!!

All of this information is provided to you by the Macalister Demonstration Farm in partnership with Dairy Australia for FREE