Macalister Demonstration Farm

PO Box 87, MAFFRA, VIC 3860
Ph. (03) 5145 1650 Fax (03) 5145 1650
Email: mdf@wideband.net.au Web: http://mdf.mistro.ag/

NEWSLETTER 42

Monday November 15th 2010

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

GIPPSLAND REGION SUSTAINABLE WATER STRATEGY

The UDV warmly invites anyone interested in making a submission to the GRSWS to attend a short meeting at the Macalister Demonstration Farm
Wednesday 17th November, 2010 from 10.30 am to 12.00noon.
Please bring along your ideas in writing so we can cover the issues swiftly.
All enquiries to Dale Scott 51486369

Yellow Rag Bit

Bree Walshe, Dairy Advisor DPI Maffra

What I have seen on my travels around Northern Victoria

I have spent the last three weeks going back and forth to Tatura for locust response work and thought I would inform you all on what I have been observing!

In recent years a lot of our fodder supply has come from the northern Victoria region and this year will probably be no different. They are having a bumper season up there – with plenty of rain, yes rain. All of the cereal crops are fence height and looking fantastic – green and dense. On my many drives from Tatura to Echuca or to Bendigo it is paddock after paddock of such crops, all looking great, except for a few that are in low lying areas or at the end of once used laser graded bays which are water logged!

However, like all good news there is often bad news that accompanies it!
On my travels I also saw a lot of crops cut, being raked and unfortunately rained on, not just a couple of millimetres, but 20-30mm of rainfall. So I can not stress enough to you to be vigilant in chasing quality hay for the coming winter, and asking the right questions, of either your hay contractor or farmer direct – "Does it have any mould?" "Has it been shedded?" "Is it free from weeds?" and "Do you have a feedtest for it?"

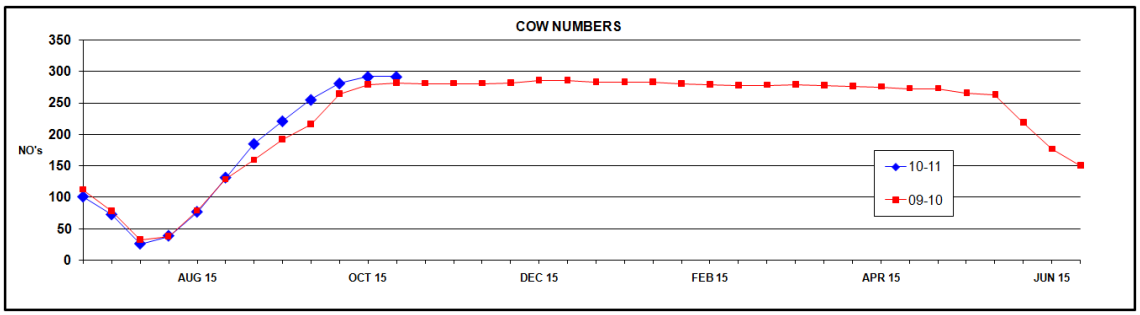
There are also two other vital questions to be asked of your northern Victorian hay growers this season:
"Were you affected by locusts this year and did you spray to treat them?"
"Did you follow the relevant withholding periods for the chemical you used on the hay paddocks?"

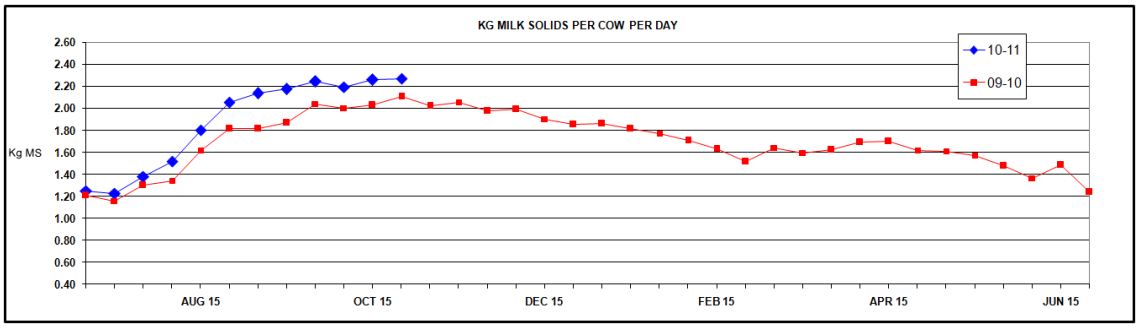
For up to date information on the locust situation and chemicals that can be used to spray you can visit the DPI website: www.dpi.vic.gov.au/locusts and http://www.daff.gov.au/animal-plant-health/locusts/current

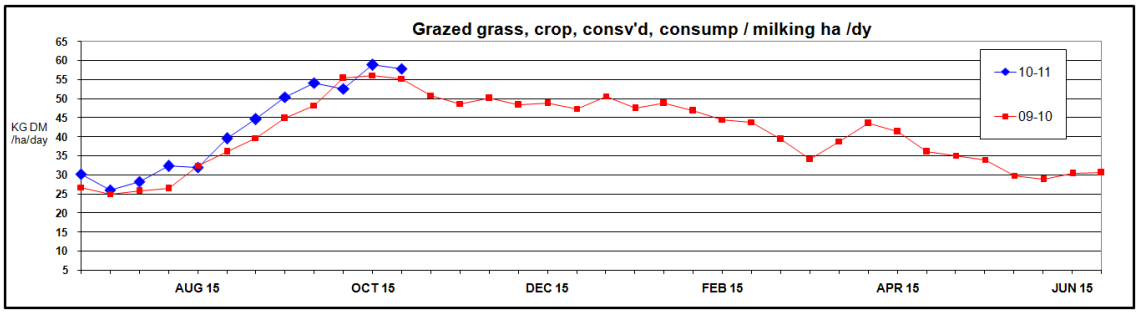
If you would like any further information please contact your hay contractor, nutritionist, trusted advisor or a dairy extension officer at DPI Maffra 5147 0800.

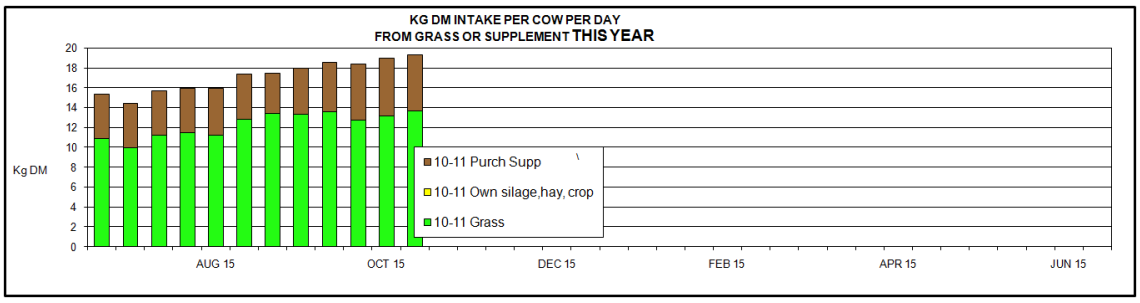
Macalister Demonstration Farm Profitability Project & Ten day Tracker Project

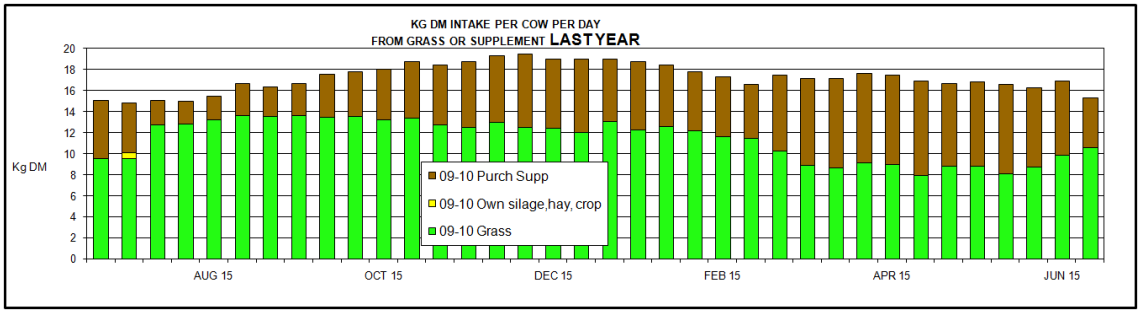
The following graphs show the MDF feeding performance, to October 31, this year compared to last.

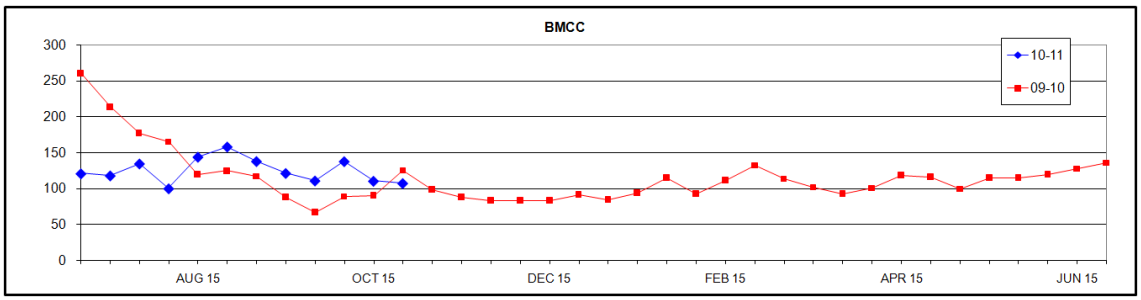




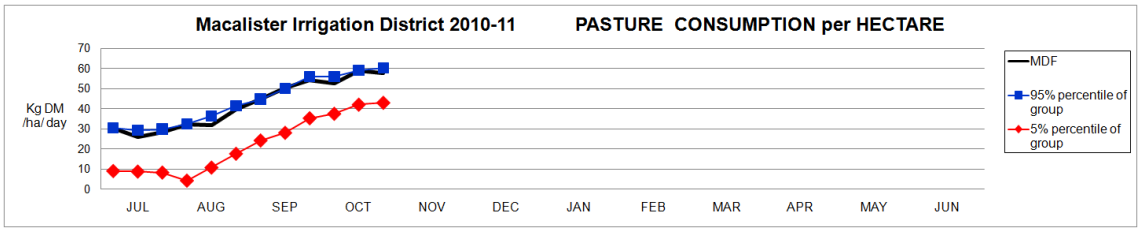


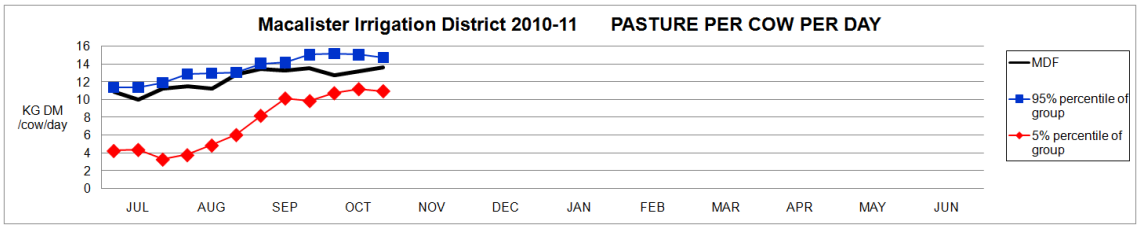


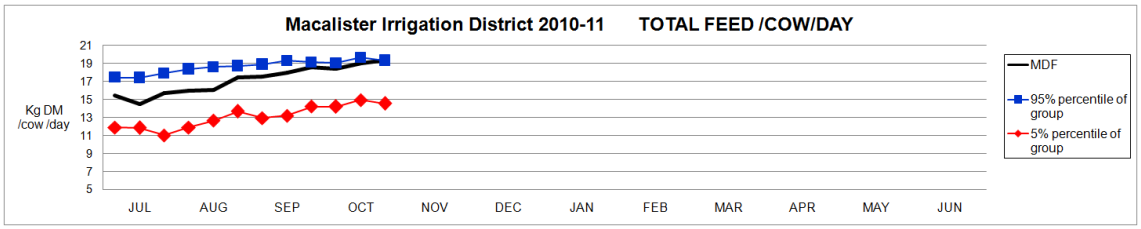


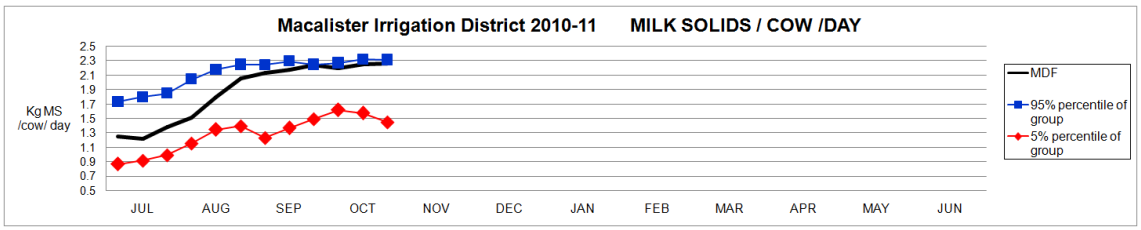


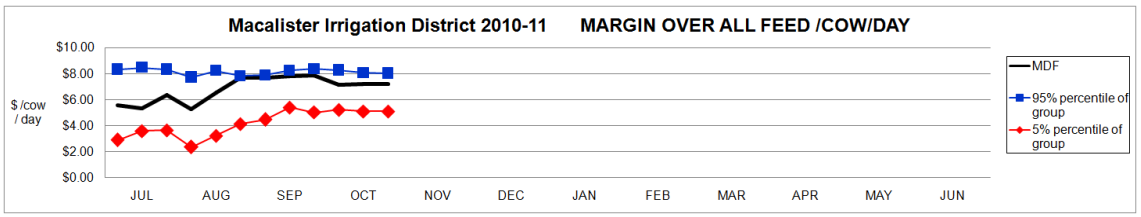
The following graphs show the where the MDF performance sits when measured against other MID Tracker Project farms to Oct 31st.

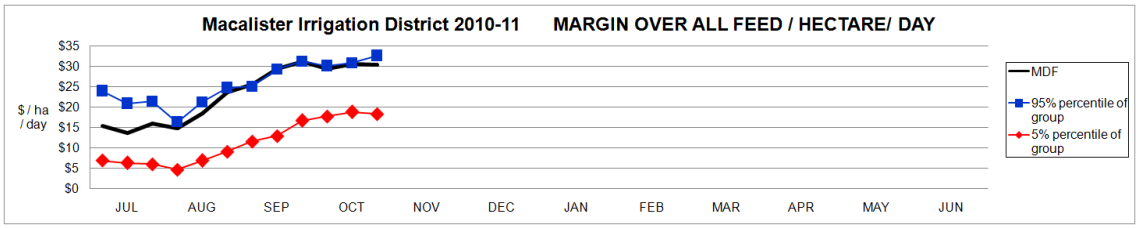






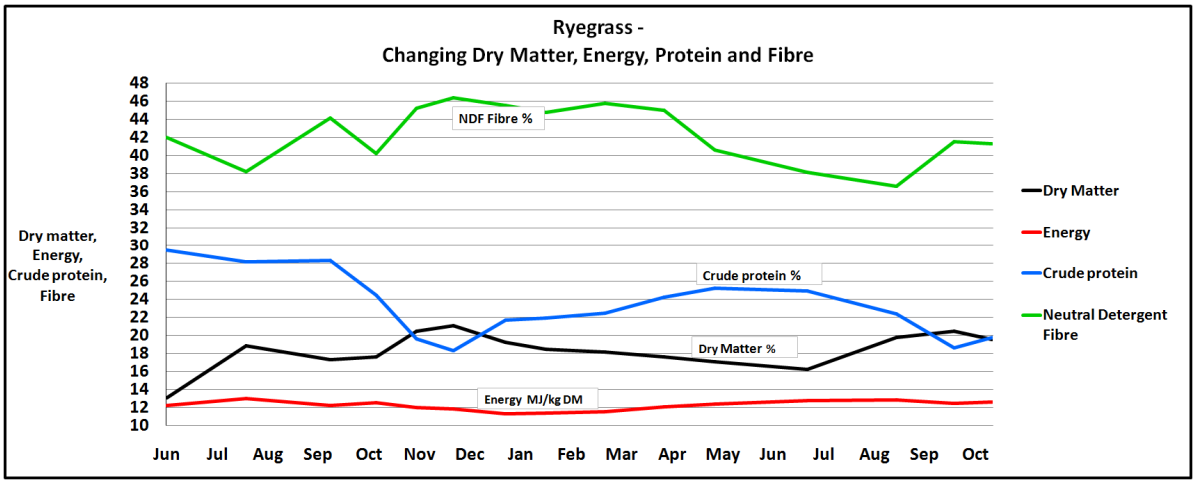






As part of the Incitec Pivot Nitrogen Fertilizer trial a feed test is carried out on 12 ryegrass plots in each grazing cycle. Here are the feed quality results from the beginning of the project in June 2009 to the last feed test on October 27.

Date	24-Jun-09	10-Aug-09	29-Sep-09	26-Oct-09	19-Nov-09	11-Dec-09	11-Jan-10	04-Feb-10	11-Mar-10	15-Apr-10	15-May-10	09-Jul-10	31-Aug-10	04-Oct-10	27-Oct-10
Dry Matter (%)	13.1	18.9	17.3	17.6	20.5	21.1	19.2	18.4	18.2	17.6	17.1	16.2	19.8	20.5	19.6
Energy (MJ/kg DM)	12.2	13.0	12.3	12.6	12.0	11.8	11.3	11.4	11.6	12.1	12.4	12.8	12.9	12.5	12.6
Crude protein (% of DM)	29.5	28.1	28.3	24.5	19.6	18.3	21.7	21.9	22.5	24.2	25.2	25.0	22.4	18.6	19.8
Neutral Detergent Fibre (% of DM)	42.0	38.2	44.1	40.2	45.2	46.4	45.5	44.8	45.8	45.0	40.6	38.2	36.6	41.5	41.3



Frank Tyndall 0409 940 782

Carbon Ready Dairy Demonstration Project – Carbon Emissions at the MDF

BACKGROUND

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 will identify the source and size of carbon emissions generated by normal operations. This information will then be 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. In the absence of Government policy on a carbon emission reduction framework this is an extract from an interim report.

In the last issue of the Newsletter we looked at feeding strategies to reduce emissions. In this issue let's have a look at energy use strategies to reduce emissions.

ENERGY STRATEGIES

In considering energy use strategies to reduce emissions it is useful to look at what might happen to electricity prices with the introduction of a price on carbon. It has been projected by Government modelling that a carbon scheme like the CPRS will result in an increase in electricity costs of 3.4%/year or more than a doubling of the cost of power used at the MDF dairy in fifteen years. In calculating future electricity prices in this study, only the increased cost of electricity as a result of the introduction of a carbon price has been included, even though we know that prices will also increase anyway for a range of other reasons over the twenty year period. It has also been assumed that any Renewable Energy Certificate (REC) issued for any solar system are sold for $30 each. Each solar alternative will generate a different number of RECs and this is reflected in the adjusted capital cost. While power costs at the dairy represent only a small proportion of total production costs, any increase in electricity costs will come directly from the farm profit so doing nothing is not really an option.

Two approaches to reduced carbon emissions from electricity use have been considered: Use of alternative sources of electricity and reduction in electricity consumption. Reduction in the use of energy, like electricity or fuel, makes good business sense at the same time as bringing about a reduction in carbon emissions so should always be front of mind. If there can be savings or productivity gains as a result of any action to save emissions then these can be invested in further emission reduction and are an important motivator.

1. Electricity at the Dairy

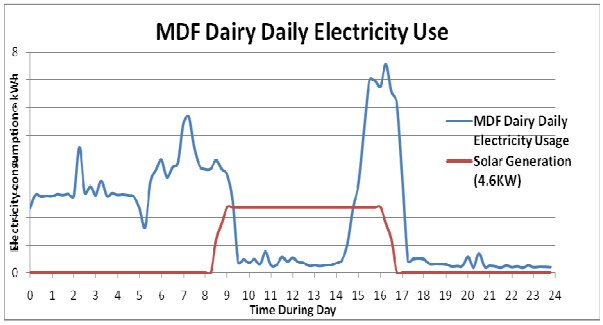
Electricity is used in the dairy to run the milking plant, for refrigeration and to heat water. The milking plant

includes a plate cooler that reduces milk temperature by 10°C which is further reduced by refrigeration in the vat to 2.8°C in 80 minutes. Milk is picked up once a day so the longest period that milk is refrigerated is 18 hours and the vat is empty for the remaining six hours of each day.

The electric hot water system is large enough to hold enough hot water for two milkings. It has a night switch and only operates on off-peak power which makes no difference to carbon emissions but keeps the costs down.

The tank is held half full during the day as cold water doesn't refill the tank until 11pm when the off-peak rate begins and the heating element is switched on. This means that water is heated for only eight hours in each day. The pattern of electricity use at the dairy can be seen in Fig. 1. You can see the peaks around milking and the increased power consumption after 11pm for hot water heating.

Fig. 1: Dairy Daily Electricity Consumption



Let's consider alternative sources of electricity available for the dairy. One option considered is the installation of solar cells at the dairy to generate electricity. In Victoria the government offers a premium to households and businesses for any electricity that is generated and fed back into the supply grid. This is limited to systems up to 5kW with a limit of 100 MW for the state before the price paid falls to a standard rate of about 80% of the price consumers pay for their power. At the MDF this is a fall from 68c/kWh under the Government premium scheme to 16c/kWh for the power generated so there is some incentive to consider the option sooner than later. Without the premium feed-in tariff the payback period for solar electricity more than doubles. A number of different sized solar systems are shown in Table 1.

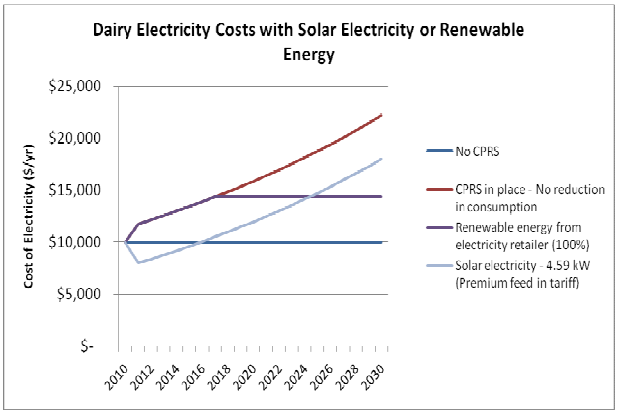
Another option is to buy renewable or 'green' power generated by power suppliers and not go to the expense of buying solar panels. It is the responsibility of the electricity supplier to satisfy the electricity regulator that they are, indeed, selling renewable energy. The greater the demand for renewable energy, the greater the incentive for the power supplier to invest in an increase in generating capacity. At the moment renewable energy for the MDF is about 28% more expensive than conventional electricity so there is no business incentive to switch now. However, it is anticipated that once a price is set for carbon that there will be a minimal difference in price within five years. This is also included in Table 1.

The payback period for solar cells is largely determined by how much power is consumed during the day when the solar panels are generating electricity. You can see in Fig. 1 with the largest solar system in place that more power is generated than what is being used for five hours between 9.30am and 2.30pm and is fed back to the grid, and power drawn from the grid is reduced for 3.5 hours during the morning and afternoon milkings. It goes without saying that if electricity use in your dairy is high during sunlight hours then the financial advantage of the higher feed-in tariff is largely lost, even though you will reduce power consumption and carbon emissions. This will make it a different decision with an associated financial risk.

The change in electricity costs for some of these options is shown in Fig. 2.

While installing a solar electric system reduces power costs, the cost trend is still upwards because the majority of the power used is from burning coal and still generates emissions. For the largest system, emissions saved are less than 10 tonnes CO_2-eq/year or less than 0.5% of farm emissions and at an investment of up to $30,000 it doesn't seem worth it. On the other hand, by buying renewable energy from the electricity retailer there is a jump in power costs of over 40% by the time power prices equalise but the advantage is that there is no capital outlay and power costs are capped because the price of renewable energy is not affected by a carbon price (other than to possibly become cheaper as more and more investment in renewable energy is made). If power use could be reduced at the same time as buying renewable energy then electricity costs could be capped at a lower level.

Fig. 2: Projected Electricity Costs 2010 – 2030 with Solar or Renewable Energy Options



This study doesn't advocate one system over another, rather it looks at a range of options. Every farm is different so it is important to include your particular circumstances in any analysis.

The next issue of the Newsletter will consider options to reduce electricity consumption in the dairy as a means of reducing emissions.

Table 1: Investment in alternative electricity sources

Alternatives Power Source at the Dairy	Adjusted capital cost $ (excl. GST)	Payback period (Yrs)	% of farm emissions saved
Renewable power purchased from electricity retailer (Begin when price difference makes it viable)	0	Immediate	5.4
Solar power fed back to the grid at premium tariff (Assume 70% of power fed back into the grid)			
Solar electricity - 1.53 kW	$ 8,490	6.2	0.2
Solar electricity – 4.59 kW	$ 30,250	7.1	0.5
Solar power fed back to the grid at standard peak tariff (Assume 70% of power fed back into the grid)			
Solar electricity – 4.59 kW	$ 30,250	15.7	0.5

Neil Baker **0400 806 246**

POSTAGE
PAID
AUSTRALIA

SENDER:

Macalister Demonstration Farm
PO Box 87 **MAFFRA** VIC 3860