

Macalister Demonstration Farm

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NEWSLETTER 53

Monday July 18th 2011



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

Off with the birds at the MDF

Mick Bramwell, DSE and renowned local 'birdo', talks about the importance of protecting paddock trees for local bird life, including a bird ID farm walk and to view the fenced off redgums and the emerging understorey plantings.

Macalister Demonstration Farm, Boggy Creek Rd, Riverslea

Tuesday 2nd August, 2011 at 10.30m

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

Yellow Rag Bit

Bree Walshe, Dairy Advisor DPI Maffra

Calves are coming

As most of you are gearing up for calving, or have already started, I thought it was an appropriate time to pass a few reminders on, to get you focussed for the calf season.

Rearing healthy calves is both challenging and rewarding. Hygiene, cleanliness and patience plays a big role in calf rearing. Dairy Australia is delivering their updated calf rearing guide to all dairy farmers, which will provide you all with the latest best management practices.

Preparation

Most of you will be prepared, having the following set up or on hand, but a quick reminder may save some stresses later:

- NLIS buttons, every calf born needs to be identifiable and traceable. Do a quick stocktake to make sure you have enough buttons for the bobbies, heifers and calves placed in the calf bins.
- National Vendor Declaration – bobby calves book, how many pages do you have left?
- Ear tags – do you have enough to see you through the season?
- Who and how are you going to pick up the calves from the paddocks?
- Pens – are they set up and ready for this seasons drop? Sawdust or other bedding, including extra to replace or top up and a fresh water supply for all calves.
- Feeders – are your feeders adequate, clean and ready to go? Do you have any spare teats on hand?
- Milk – do you have adequate storage facilities for your colostrum and calf milk?
- Roughage and concentrate – do you have straw on hand to help stimulate their gut and a concentrate to aid in their growth and development?
- Animal health – having electrolytes and sterilising products on hand to treat and prevent any scours and bug outbreaks.
- Tail paint – so that sick or treated calves can easily be identified by everyone.
- Patience, hygiene and TLC won't go astray either!

Bobby calves

You are all very well aware what the National Vendor Declaration – Bobby Calves states, but a little reminder never hurts:

1. The calves for consignment need to be at least in their fifth day of life;
2. The calves need to have a dry, withered naval cord;
3. Calves need to be fed within six hours prior to delivery at the point of sale or collection from farm;
4. All calves need to be over 23kg (liveweight);
5. Calves need to be fit and strong enough to be transported for sale or slaughter;
6. If any of the calves have been treated by a veterinarian, appropriate with holding periods need to be adhered to;
7. Avoid feeding bobby calves milk from cows that have been treated with drugs or chemicals. If they have been fed contaminated milk you must meet all the withholding period requirements.

Handling of the bobby calves is also an important component of the welfare of these animals. Bobbies should be handled in a manner which will avoid injury or unnecessary suffering. It is not acceptable for calves to be kicked, beaten, pulled, thrown or 'dumped' or prodded with any sharp instruments. The use of electric prodders or dogs when handling, drafting, driving, weighing, loading or unloading is not acceptable. As stated in the Victorian code of practice for cattle.

For further advice on your animal welfare, NLIS and vendor declaration requirements please contact your local animal health officer at DPI Maffra on 5147 0800. Or for further advice on raising healthy calves please contact your trusted veterinarian.

Macalister Demonstration Farm Profitability Project

May 27, 2011

Paddock 16's "nil potash/nil molybdenum" square is still showing less grass than the rest of the paddock. Paddock 13's square is still showing no difference in grass amount. Paddock 16 has a long established layout and pasture, whereas paddock 13 was laser graded 3 years ago.

June 3, 2011

Clumps of ryegrass have been pulling out of some paddocks, worse in the sub-surface drip irrigated area. There are many theories why ryegrass roots become weak and shallow, ranging from being too dry, too wet, compacted soil, low pH, aluminium toxicity, and one-leaf grazing rest time. It seems to happen more often on the lighter soils and in autumn. Normally on irrigated paddocks, cockchafers are not the reason because they get drowned. However, some digging has found them, black and red headed but only in the sub-surface drip paddocks. This makes sense because the surface soil here is only ever wet by rain. Incidentally, all the digging found worms in abundance in all paddocks. Three milking cows have had milk fever, so the calcium level in the mineral mix has been lifted.

June 10, 2011

The soil phosphorus levels on the farm are high. From 11 recent tests, the Olsen P maximum was 96, the minimum was 23 (on the recently laser graded area), and average 45 ppm. The nil-potash squares, showing differing grass growth, have stimulated the establishment of a couple of phosphorus test strips

June 17, 2011

A major setting for any dairy farm is its stocking rate. The MDF's 2011-12 stocking rate will be much the same as 2010-11, peaking with 300 cows in December, at 4.1 cows per hectare. Stocking rate per hectare should be based on the expected pasture consumption per hectare. This is because the amount of grass per cow setting is an important driver of feeding productivity, efficiency and profitability. If too high, the cows may not be able to eat it all. If grain per cow is minimised to get high grass per cow, milk per cow may suffer. If grass per cow is too low, the average price of feed rises too much. 3.5 to 4 tonne of grass per cow may be a sweet spot for the current milk price and feed price (irrigation water availability, fertiliser price and grain price) conditions.

June 24, 2011

The BMCC has fallen from 117 to 110. For the ten days to June 20, the MDF was ranked 5th out of 356 suppliers. This time last year the BMCC was 133.

All cows being dried off are being treated with dry-cow antibiotic. All cows, as well as the 2 yr old heifers about to calve for the first time, are being treated with teat seal.

Irrigation water use was down significantly this season: 2010-11, 327 MI; 2009-10, 480 MI; 2008-09, 491 MI; 2007-08, 472 MI; 2006-07, 412 MI.

Soil temperature is currently around 10°C. All sorts of weather data (soil temperature, rainfall, evaporation, wind speed) is stored at the MDF weather station website (www.agua.com.au/DPIVic/).

The soil moisture level on the farm is currently very good; perhaps a little dry at depth in some paddocks and wetter in the paddocks that are heavily protected from drying winds by tree belts.

July 1, 2011

The feed plan for the dry cows and heifers about to calf is to keep all of them at home and feed them grass and PKE. There is plenty of grass and if it stays reasonably dry this system means they should be well fed, and well supervised, as it has worked out for the last two years. The PKE has been chosen rather than hay or silage because it is a reliably high energy food. However, like hay and silage, much can be wasted during storage and feed out. We have one good feed-out trailer and will use some deep walled concrete troughs. The PKE will also be stored in a shed, under cover, on concrete, to minimise loss onto the ground, wind blowing it away, and rain damage. This means only small loads can be delivered and it will have to be augured in. Small loads are 7% more expensive but the on-the-ground-under-plastic storage probably wasted more than 7%. Waste of inputs is a major reason why good margins are not achieved.

July 8, 2011

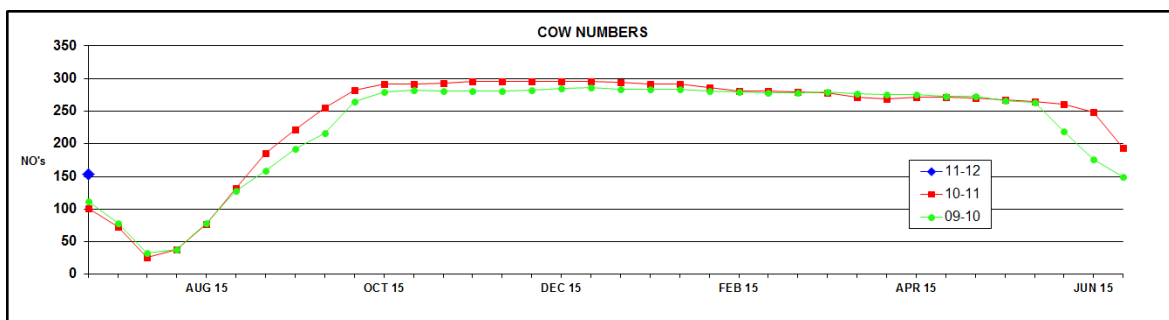
The Macalister Demonstration Farm continues to dry off cows and is now milking 155, grazing 45 hectares, a stocking rate of 3.4 cows per hectare. Last year at this time, there were 101 milkers, and the stocking rate was 2.9 cows per hectare. The milker numbers are staying higher into July this year because we have moved the start of calving date forward ten days, to August 20, so drying off can now be later. The daily allocation for the week is one 50th of the grazing area, and the grazing rest time is 48 days.

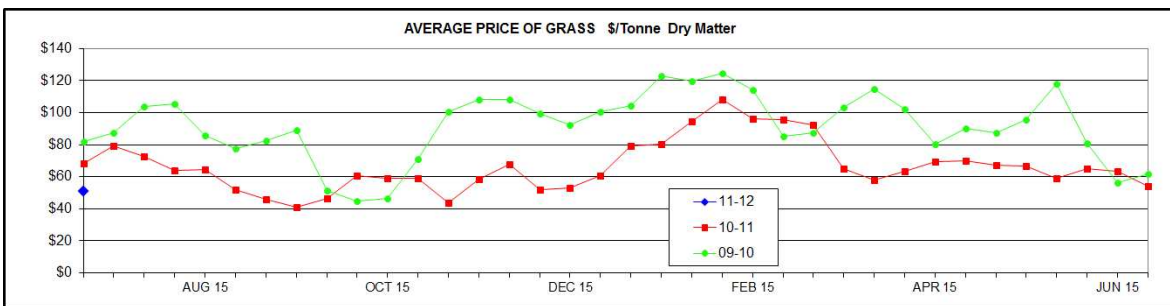
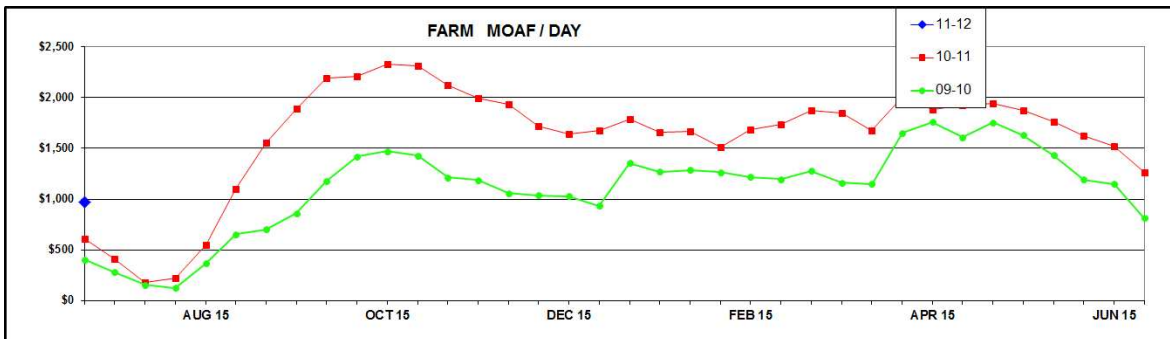
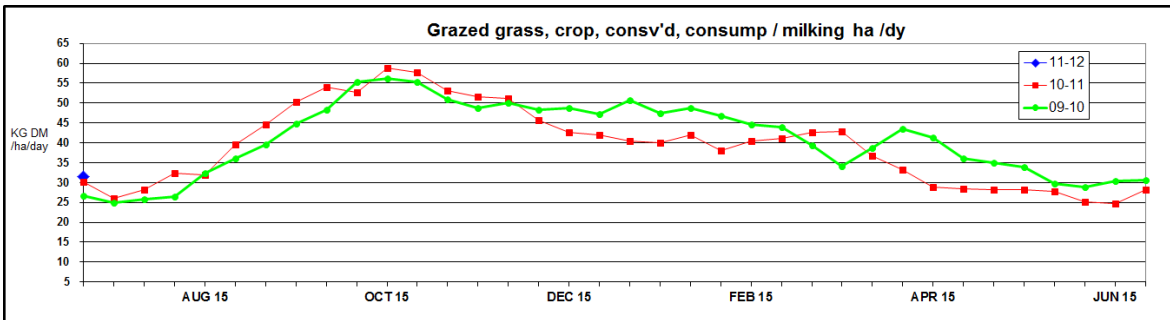
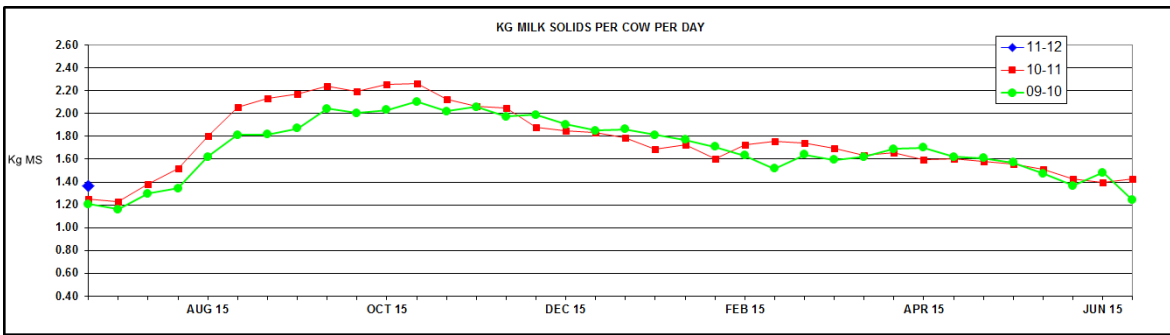
Compared to last week, milk production per cow is the same at 1.36 kg milk solids (MS) per cow per day. These are very late lactation cows, most about to be dried off, about 20 to be milked through winter and not-in-calf. The latter will be sold only if their production falls below 12 litres. Litres per cow per day are up from 16.1 to 16.9. Milk fat test has fallen from 4.46% to 3.95% (fat yield is down from 0.72 to 0.67 kg per cow per day). The protein test has risen from 4.00% to 4.09% (protein yield is up from 0.65 to 0.69 kg per cow per day). This time last year, milk production was 15.5 litres, 1.24 kg MS, 0.64 kg fat, and 0.61 kg protein per cow per day. Protein being higher than fat is unusual and is being caused by the low fibre diet (28.5% NDF). The diet is low in fibre because of the low grass to concentrate proportion, and no hay being fed.

Feed cost per cow per day (including pasture and supplements) is down from \$3.09 to \$2.85 per cow per day, leaving a Margin over All Feed (MOAF) per cow of \$6.32, down from \$6.17 per day. The margin over all feed per hectare is \$21.77. The whole farm feed margin is \$980, down from \$1,089 per day. This time last year the whole farm feed margin was \$606 per day.

The oaten hay we have bought to feed to the springing cows has been feed tested to ascertain its mineral levels, to calculate its Dietary Cation Anion difference (DCAD). DCAD is calculated using the formula $(Na + K) - (Cl + S)$. Its DCAD is 14.6 meq/100 gm, which is an acceptably low level. In previous years barley hay was 6.7, wheaten hay 14.8, and wheaten hay 10.7. Pasture hay can be 30 to 60. Springing diets aim to have a negative DCAD, so it is best if the hay DCAD is not high to start with.

Now that the season has largely ended, let's compare production and performance levels over the last two seasons:





Frank Tyndall 0409 940 782

Dairy Energy Efficiency – Refrigeration Heat Extraction


With agriculture excluded from the proposed carbon trading scheme, the focus of farmers needs to shift to farm inputs that will experience a price rise as a result of a price on carbon emissions. The greatest price rise is anticipated in power costs so reducing electricity consumption will not only reduce emissions but reduce costs and, so, protect the farm business.

The biggest user of power is the dairy so we invested in an energy audit at the dairy. It took some time to find someone who had expertise in not only energy use but who was also very familiar with dairy plant operation, however AgVet Projects in Warragul met the standard we had set and were excellent to work with. The audit report highlighted that milk cooling (33%) and water heating (37%) are the biggest energy users and should be the focus of our energy saving plan.

Apart from making sure that the plant is running efficiently and energy is not being wasted through poor practices, there are a number of investments that might be considered to reduce electricity consumption. One that was identified during the dairy energy audit was the installation of a heat recovery unit on the refrigeration compressor to lower the temperature of refrigeration gases. This not only improves the cooling efficiency of the system but traps heat from the milk that would otherwise be wasted to the atmosphere that can then be used as hot water feed. Performance data suggests that the gain from a heat recovery unit may be equivalent to lowering the temperature of milk entering the vat by 2-3°C while the heated water could be used as a feed for the hot water services. In both instances this is an energy saving. We decided to install and test a unit to see how much in emissions and how many dollars could be saved.

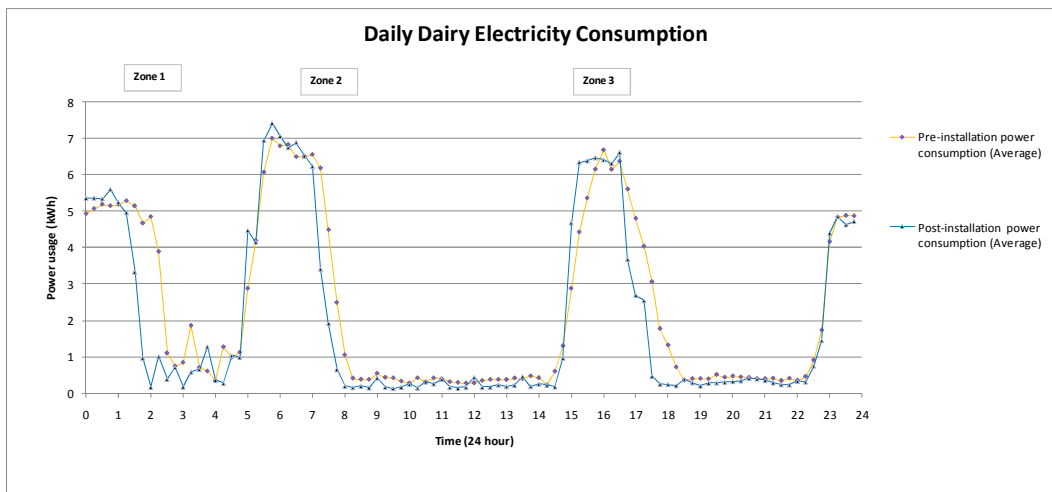
A ‘Superheater’ unit was installed in May 2011 and measurements were taken every fifteen minutes of pre- and post-installation power consumption. This is presented in Fig. 1. There is a noticeable difference between the power consumption curves after installation of the unit. Zone 1 represents the power used to heat hot water using off peak power. The ‘Superheater’ has been installed so that it stores 450 litres of water warmed to 45°C until 11pm when it is then used to feed the main 1000 litre hot water service. This means that the hot water service heats water with an incoming water temperature of 32°C up to 90°C rather than from an incoming water temperature of 18°C prior to installation. The result is that the hot water service now operates for about an hour less each day and saves about 20% of water heating costs or a little more than 12kWh per day.

SuperHeater
Commercial Heat Recovery Unit



- 450 litre pressurized
- Connection of up to 2 compressors
- Stainless steel outer skin
- Safety relief valve
- Internal vessel pressure tested to 250 PSI
- Fully insulated
- Dimensions: 750 x 1575mm
- Refrigeration connection size: 1 1/8"
- Inlet & outlet pipe size: 1 1/4" NPT

Fig. 1: Daily Dairy Electricity Consumption before and after ‘Superheater’ installation



Zones 2 and 3 represent the power consumed to chill the milk going into the vat. At each of these times the hot water service is not operating and when these measurements were taken the farm was on a night pick up. You can see that the vat chiller runs for a shorter time after both the morning and afternoon milkings because of improved cooling efficiency. The result is that electricity consumption for vat refrigeration is down, saving about 18% of refrigeration costs or 14 kWh per day (Table 1).

Table 1: Water heating and milk cooling savings with a ‘Superheater’

Source of saving	Saving (kWh/dy)	Saving (\$)
Water heating	12	\$1.48/day
Vat cooling	14	\$3.02/day
Total	26	\$4.50/day
NOTE: Off-peak power - 12.03 c/kWh includes weekends; Peak power - 25.403 c/kWh		\$1,373/305 day lactation
Unit cost (incl. installation; excl GST)		\$7,500
Payback (assume 305 days of savings; no interest on borrowings)		5.5 yrs
Payback (assume as above plus impact of carbon price on electricity costs)		2.7 yrs

With a saving of \$1,373/year on dairy electricity and the 'Superheater' under warranty for five years we can expect to have continued savings for at least a further ten years on the unit. The benefits will become even more significant as power costs rise, particularly with the advent of a carbon tax or carbon trading scheme. As well as savings on the power bill, a drop in power consumption of 26 kWh/day or 7,930 kWh/year equates to an annual reduction of 11 t CO₂-eq in carbon emissions. While this represents only 0.5% of total farm emissions it is a productive contribution towards the national target of a 5% reduction in emissions by 2020 without threatening business viability.

This project is supported by funding from the Australian Government Department of Agriculture Fisheries and Forestry under its Australia's Farming Future initiative.



Australian Government
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