

Macalister Demonstration Farm

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NEWSLETTER 38

Monday August 23rd 2010



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

Nitrogen Use Efficiency

Incitec Pivot invites you to inspect the Nitrogen and Progibb trial at the MDF and get first hand information on the effectiveness of Progibb and the role of nitrogen fertilizer in maximising a response. The day will also look at the most effective use of nitrogen fertilizer in the upcoming spring – not to be missed.

10.30 am-12 pm Tuesday, August 31st 2010

Macalister Demonstration Farm

Lunch provided.

Celebrating 50 years!!

MDF AGM & Annual Field Day

Correction of date

Thursday, October 28th 2010, 10.00 am- 2 pm (not August as was listed in the last issue)

Yellow Rag Bit

Bree Walshe, Dairy Advisor DPI Maffra

Where can I find out more about that?

It is the time of year when 'time' escapes us, so here are some quick links or phone numbers to help you keep up to date on some key information on the following topics:

Locusts – are in every piece of media out there at the moment – here are the two best websites for up to date information on hatchings, sightings and control measures!

www.dpi.vic.gov.au/locusts and <http://www.daff.gov.au/animal-plant-health/locusts/current>

Or you can call the DPI Locust hotline on 1300 135 559

Grain & hay report – The Russian export ban has led to increased grain prices and the market is very volatile at the moment. Stay informed so you can best manage the risk of price exposure for your business by visiting:

<http://www.dairyaustralia.com.au/Farm/Feeding-cows/Bought-in-feeds/Grain-and-Hay-Report.aspx> .

First Farm Grant – \$10,000 is available for eligible new farm owners, sharefarmers, and lessee's under 40. For further information visit the Rural Finance website – www.ruralfinance.com.au , and for assistance in determining whether you qualify for this grant please call the Gippsland Rural Financial Counselling Service (GRFCS)– on 5147 0800

Water trading – currently with decent inflows and a reasonable opening allocation to the irrigation season, not to mention rainfall, water trading may be far from your thoughts. But DPI & SRW have developed a water trading booklet which has an extensive questions and answer section as well as simple examples to help you understand water trading in the MID - please call Maria Rose DPI Maffra on 5147 0800 for a copy.

The People in Dairy website is full of simple to use templates and information to help you meet all of your legal requirements, including pay rates and position descriptions, when employing staff. Go to: www.thepeopleindairy.org.au

Weather – The Bureau of Meteorology has a farmer specific section called the ‘Water and the Land’ www.bom.gov.au/watl/ where you can use the ‘Forecast explorer’ www.bom.gov.au/forecasts/graphical/sectors/VIC.php to help make daily decisions about wind, temperature and rainfall.

Don’t forget to utilise your 2 local weather stations at Tinamba and Denison as well by visiting www.agua.com.au/DPIVic

The DPI dairy team has a new e-newsletter called **Milking the Weather** keeping you up to date on what the climate models are doing and how this can help you to manage seasonal risk for your dairy farm. If you would like to subscribe please call Bree at DPI Maffra on 5147 0800

For further information call your local dairy extension officer at Maffra DPI on 5147 0800, who can point you in the right direction.

Optimising YOUR daily margins for Profit

Industry benchmarks can guide decisions to improve profit, however they are often **averages** from many farms, or **averages** over a year for the same farm. Each farm, on each day, is a different circumstance: different soil fertility, soil moisture, pasture composition, capacity of cows to eat, capacity to raise cash, labour available, management skills, etc, etc.

Assessing a particular farm’s current situation often, understanding how all the different inputs produce a financial response, and then optimising the inputs at the margin, is most likely to achieve the best possible profit - more likely than aiming for a yearly industry benchmark at all costs.

Dozens of small physical input decisions are made every day:

- Insert a tube of antibiotic, trim a cow’s foot, feed less hay, feed more grain, spread more nitrogen, fix a gate, drench a calf, install some spinner cuts, irrigate a paddock, inseminate a cow, milk a cow or dry her off, feed less so as to “mine” body condition, attend an irrigation course to get a free tensiometer, etc.

Occasionally very large input decisions are made:

- Install electronic ID, buy an automatic calf feeder, laser grade a paddock, build a rotary dairy, etc.

You expect a physical response that is some amount of physical output from all these inputs:

- More grass from nitrogen, a lower cell count from a tube of antibiotic, less labour needed with a rotary dairy, etc.

Figure 1 shows Input 1 with its physical response. Looking at the curve with square data points in the top graph, a 10 kg input level gets a **physical response** of ‘10 kg of output for each 1 kg of input’. The physical response at the 20 kg of input level climbs to ‘14 kg of output for each 1 kg of input’, but then the response slowly reduces until, at the 95 kg input level, the physical response is zero.

The physical response of an input is nice to know but we must apply the price of the input and the price of the output to see what the **financial response** is. In Figure 1, the curve with square data points in the lower graph shows the financial response to Input 1. It shows that at an input level of 10 kg, there is a financial response of ‘\$1.80 returned for \$1.00 spent’. At the 30 kg input level, the financial response climbs to ‘\$2.50 returned for \$1.00 spent’ but then the response reduces until, at the 90 kg input level the response is a ‘\$1 return for \$1’ spent. Therefore it would be silly to input more than 90 kg.

Both of the curves of squares, physical and financial, are called **marginal responses** curves. They track the response to the “last” or “marginal” kg of input. The curves of diamonds are the average response curves. They track the response to the total input. The average response curves are very misleading. The average financial response of input 1 seems to show that even at the 100 kg input level you are getting a worthwhile financial response (nearly \$2 returned for \$1.00 spent) response, when in fact, the last kg input at that stage is losing money. Use marginal responses, not average responses, to make decisions on more or less input.

Diminishing marginal returns, input waste, and risk

Figure 2 shows the response curves for Input 2. They are quite different to Input 1. Each input has its own response curve, but they all have similarities. Many inputs do not provide much response if very little is used. For example, only 1/10th of a tube of antibiotic would not cure mastitis. As more antibiotic is used the response becomes greater, but there would be no marginal response to the tenth tube in the same quarter! Responses **always** reduce eventually. They all exhibit diminishing marginal returns.

On the right hand side of a response curve the input starts to be wasted. As you move to the right of the curve the risk of input waste is greater. However, the more you understand how each input delivers its response, and the more carefully you manage that input, the lower the risk of wasting input.

Figure 1: The physical and financial responses of Input 1

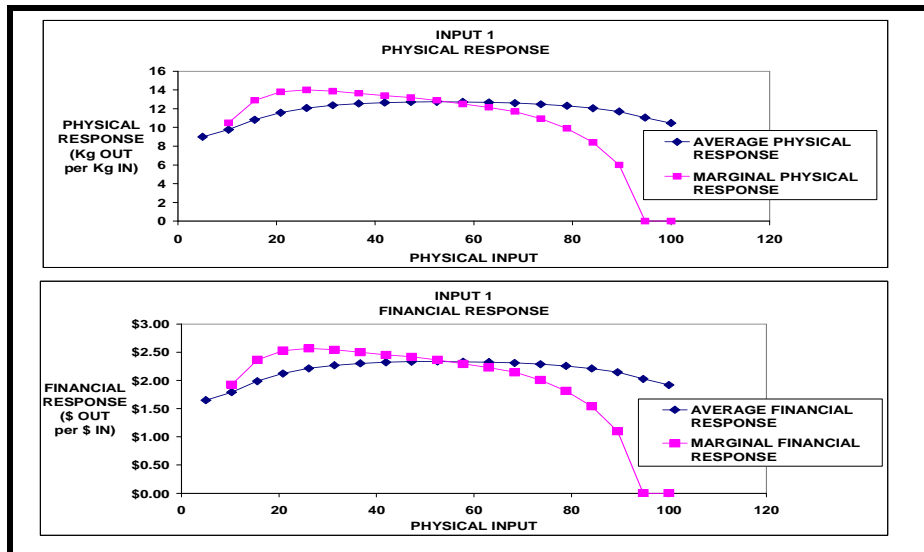
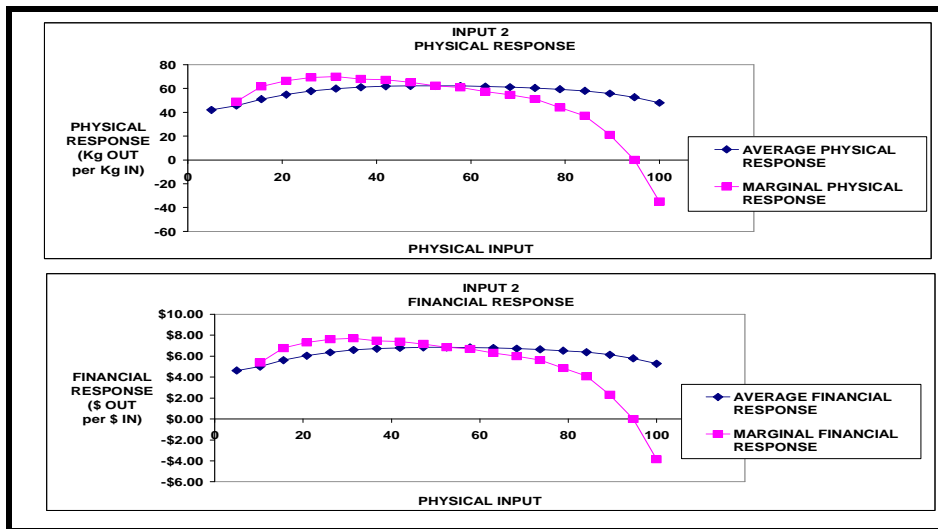


Figure 2: The physical and financial responses of Input 2



Summary

Money must be spent to make profit. Be your own consultant. On which input should the next dollar be spent to make the most profit? On grain, on nitrogen, on lengthening the grazing rotation, on calf pellets, on a semen straw, etc? Understanding the marginal financial responses of all possible inputs, how they work and their risk of waste in your current farm situation with your management ability, helps you stay in a **more profitable position** more often.

Frank Tyndall 0409 940 782

SUB-SURFACE DRIP IRRIGATION - HOW DID THE SYSTEM PERFORM IN ITS SECOND SEASON?

PART 2:

So how do we account for the differences between systems and soil types, particularly when the sub-surface drip irrigation system was the best performed last season?

The pattern of growth over the 2010 season under each of flood irrigation and fixed spray irrigation is very similar to the pattern of growth over the 2009 season. Early in the season, when it was hot and dry, pasture production was very high, however, the poorer performance of the flood irrigation system is largely the result of rainfall on top of irrigation in

December and late February that extended the time that the paddock was waterlogged and so extended the period of slow pasture growth.

The fixed spray system is installed on the Tinamba red soil that is not as prone to waterlogging. Any rain that fell on top of irrigation moved quickly through the profile and the pasture soon started growing again. This is evident in the consistency of growth rate under fixed sprays.

In 2009 the strong pasture growth under SSDI was put down to high nitrogen levels after effluent application in 2008 with an expectation that this would be largely lost this season.

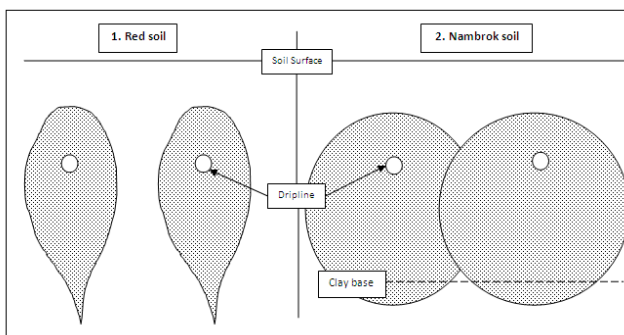
While the evidence at the time of a positive impact on SSDI pasture growth was strong, a comparison of pasture growth rates over the two seasons shows that there was little difference. Poorer pasture growth on the Denison soil in December and February was again due to waterlogging.

The difference between the two years in pasture production on the Tinamba red soil can be explained by the different approach to watering in those two years. The Tinamba red soil has been much harder to manage because it is very hard to get the water to travel sideways between the driplines to create an even moisture level across the paddock. Last season our response on a number of occasions was to turn the water on for as long as it took to wet the profile. Because of the free draining nature of the soil full water capacity lasted only a day or two so the pasture response was impressive. However, it was not realistic to just leave the tap running so late in the season the irrigation schedule was changed to pulsing - short bursts of irrigation with short rest between - and this is reflected in lower growth rates in April than in the hotter months.

Because the project is attempting to identify water efficiencies the pulsing irrigation schedule has been maintained for the whole of the 2010 season. This has resulted in much less water being applied, less apparent deep drainage loss but lower growth rates. While it has been obvious that the moisture level between the driplines has been too low, the nature of the soil meant that it was impossible to achieve an even moisture profile without saturating the paddock.

To track soil moisture levels a series of core samples were taken one day after irrigation on both soil types at a range of depths across the distance between the driplines. When the moisture was carefully chased down into the soil it revealed the moisture profiles in Fig. 1. This difference in moisture profile explained why growth between driplines was sparse and stunted, but particularly so on the Tinamba red soil.

Fig. 1: Soil moisture profile around driplines



It would seem then that a key learning to this stage is that for pasture growth over a SSDI system soil type is very important. To generate the even plant growth across the paddock that will maximise pasture production the soil needs to be of a type that either encourages sideways movement of water or soil that has a clay base at will hold moisture in the root zone, as is the case on the Denison soil. For row crops or crops with extensive root systems, like lucerne, this is less critical as the soil moisture level above the dripline is nearly always at an optimum. However, for shallow rooted pasture

plants it can be the difference in making the system worth considering. Another alternative is to move the driplines closer together so less sideways movement is required but this will come at a cost.

Challenges to managing a SSDI system

Achieving consistent root zone moisture levels is a constant challenge – the top 10cm of soil can seem dry while the next 10cm is perfect yet too much and water goes to deep drainage; too little results in water stressed plants. Monitoring soil moisture level and then irrigating to match soil type is the key to success. We have yet to master this so there is much improvement to come.

Fertilizer application has also created some unexpected issues. We have observed over the past two seasons low level symptoms of nitrate poisoning that has been attributed to high nitrogen levels following effluent application. However we noticed this year that urea spread after grazing on the dry soil surface stayed for days longer than was seen under the other irrigation systems and was not flushed into the soil until there was a shower of rain. The result was a flush of later growth, in some instances too close to grazing. This also meant poor fertilizer utilization that may have reduced pasture growth.

A fertigation unit was installed later in the season to deliver liquid nitrogen fertilizer with the irrigation water to improve utilization and overcome toxicity problems. However, the fertilizer is only delivered as far as the water reaches and with the issues we have in spreading the water the effect is the sort of striping we have seen before.

Is SSDI the answer for dairy pastures?

We've seen:

- strong pasture growth that shows great potential;
- strong growth in hot weather if soil moisture level is right;
- Flexibility that delivers water where and when it is needed.

We've been challenged by:

- High installation costs;
- Different soil types with different watering requirements;
- Keeping soil moisture levels even across the paddock and at an optimum to maintain high levels of production.

The jury is still out as to whether SSDI has a future in pasture based dairy production so assessment of the system and its performance needs to continue.

WHERE TO FROM HERE?

Because we were not able to collect some critical data this season the project will continue for another year. We will continue to fine tune the irrigation system to remove the variability of moisture level and consequent pasture growth.

A block of faulty dripline has also been removed and the manufacturer, Netafim, has generously agreed to replace it at a narrower 500 mm row spacing. This will enable us to measure any difference in performance under a more intense design. The results will be very interesting.

Watch this space.

If you would like a copy of the detailed Information Sheet contact Neil Baker on 51 411 712 or neilbaker@aapt.net.au

Sustainable Farm Families™



The most important aspect of a healthy Australian farm? A healthy farming family.



Developed to bring better health, well-being and safety to people on the land, Sustainable Farm Families (SFF) is a program of practical, straightforward information and advice that has proved life-changing for many participants.

Working long hours, often far from town, farming men and women and their families can be neglected in terms of preventative health care. Making the time for health and well-being is often the last thing on a busy farm agenda.

Research proves that taking responsibility for personal health can dramatically lower the likelihood of heart disease, stroke, cancer, obesity, mental illness and diabetes. We also know that stress impacts on your health and well-being – this is particularly relevant to those on the land.



Better health

The award-winning Sustainable Farm Families (SFF) program is broken into yearly no-fuss workshops with long-term follow-up. During the first two-day workshop, fasting glucose and cholesterol levels are measured and you also receive an eyesight check, height, weight, and body mass measurements; blood pressure and respiratory tests. Results are discussed one-on-one with a health

care professional and referrals for follow up appointments arranged. There are also group discussions on a range of health, well-being and safety issues of interest to farming families.

The second and third year workshops include complete health assessments where results are compared to the year before, with practical tips on improvements.



Better understanding

During the program health and well-being topics covered include cardiovascular disease, diabetes, cancer, stress, women and men's health issues, nutrition, physical activity, anxiety and depression as well as farm safety. The information is presented in a practical

way – for example going to the supermarket and learning to read labels on food so you can assess the nutritional value and understand what it means for you and your family's health. A SFF team member is there to help in every way they can.



Better business

The most important thing for farming men and women is that the SFF program is designed to enhance your farming business. It is run with your specific way of life in mind and with your priorities foremost. People who have already been involved with the program have

been able to implement changes on the farm that have potentially life-saving consequences – whether in terms of personal health issues like skin cancer and heart disease, general well-being and stress management, or safety around the home and farm.

www.sustainablefarmfamilies.org.au

Sustainable Farm Families™

IT'S FREE, NO STRINGS ATTACHED!

Join us as a Sustainable Farm Families workshop participant to discuss healthy living, health issues and stress management for farmers on Thursday and Friday October 14th and 15th 2010. Every participant will receive a free health check as well as a one on one session with a health professional to discuss results and map out a healthy lifestyles plan. Follow up health checks will be programmed in October 2011 and 2012.

Yes IT'S ALL FREE!

Places strictly limered so register immediately with Neil Baker on 51 411 712 or neilbaker@aapt.net.au.
(Registration closes on September 17th 2010)

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