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# FEED TROUGH

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## APPLYING P FERTILISER

### When is it profitable?

When the annual soil analyses are returned, indicating adequate Phosphorus (P) levels - above Critical P levels - many dairy farmers now feel confident in reducing and strategically applying P fertilizer only to paddocks showing below Critical P level.

In the past, some farmers and their consultants have chosen to continue to apply P fertiliser, even when soil testing indicates none is required, so as to ensure production will not be limited by phosphorus deficiency (insurance phosphorus applications). It is not profitable to apply P fertiliser when none is required.

Greener Pastures research has shown that, on most soils, soil P levels do not drastically decline when P fertiliser is no longer applied; they decline slowly. Regular soil testing allows the farmer to monitor P levels, ensuring individual paddock levels do not fall below the

critical level. Soil test results allow for a margin of error in case no fertiliser phosphorus is applied, a further buffer against deficiencies.

Partner Farmer with Greener Pastures, Grant Evans certainly values the use of regular soil testing to monitor trends over time plus the use of tissue tests to determine his fertiliser program. Based on this information Grant has significantly reduced his P fertiliser application rates over the last few years.

Remember, it is a waste of money to apply fertiliser to acid soils – apply sufficient lime to raise soil pH in top 10cm to 5.5 or greater.

The table below shows, for the top 10 cm of different soils, the P sorption capacity of soil and critical Colwell soil test levels. Check out the Greener Pastures website for further details:

[www.agric.wa.gov.au/greenerpastures](http://www.agric.wa.gov.au/greenerpastures) ■

[Units for reactive iron and critical test levels are mg/kg = ppm]

P sorption category of soil	Reactive iron (mg/kg)	P retention index (PRI) (L/g)	P buffering index (PBI) (no units)	Critical soil test level (mg/kg)
Very low	Less than 100	-5 to 0	3 to 10	10
Low	100 to 300	0 to 2	10 to 20	20
Moderate	300 to 1000	2 to 10	20 to 40	30
High	1000 to 1500	10 to 25	40 to 60	40
Very high	More than 1500	25 to 50	60 to 150	50

Grant Evans Partner Farmer  
with Greener Pastures



### From the Editor's Desk

Welcome to the second edition of Feed Trough. In this edition, we have included timely articles on managing heat stress in cows and managing your irrigation, all long with more feed based information, all of which we hope you will find helpful. Remember, you can follow the links provided with the articles and at end of the newsletter, if you would like more information. ■

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# Maize Crop Fills the Feed Gap

**Boyanup dairy farmer** Victor Rodwell, strongly believes in feed budgeting. It allows Victor to plan the feed requirement of his 600-cow herd efficiently, whilst maximizing his profitability.

With the increased use of centre pivot irrigation in his system, Victor identified a feed gap in April and May, during the renovation of some of his irrigation paddocks.

A component of Victor's risk management process is the desire to become more self sufficient in forage production, which included the consideration of high yielding forage crops. Simultaneously, he was look-

ing for a use for his dairy effluent to capture its nutritive value. Therefore, in the summer of 2008/09 he decided to trial a crop of maize in a paddock close to the dairy, which could be partly irrigated with effluent.

Maize has a high requirement for water due to its high yields, but it is one of the most efficient users of water per kg DM produced.

Using a 105 day variety, last year's crop yielded 18 t DM/ha with an ME of 10.6 MJ/kg DM and CP of 8.5%. At an estimated cost of \$160 /t DM, this provided very cost effective high energy forage

that Victor used to feed his spring calving heifers.

Based on these good results, Victor sowed a 125 day variety in late November 2008 that he plans to harvest in early April. The high January temperature has certainly affected growth on some parts of the paddock, but overall the crop steaming ahead with plants over 2.5 metres. ■

*The Future Dairy website has an excellent guide for growing maize for silage. [www.futuredairy.com.au](http://www.futuredairy.com.au)*

*Victor Rodwell 'in the maize' with John Lucey, DAFWA*



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## WHEN TO IRRIGATE

The most difficult decision during the irrigation period, is deciding when and for how long. Too much irrigation results in the loss of water and nutrients; too little, then the plants become stressed, resulting in reduced growth. Luckily, there are simple tools and processes to help you make these decisions easier.

One way is to understand how the soil moisture (water) changes over time due to plants transpiration. This can be done by using soil moisture monitoring tools to measure this change.

Boyanup dairy farmer Victor Rodwell swears by the use of soil moisture monitoring equipment as it ensure he maximizes the efficiency of his irrigation system.... he now feels totally justified in his recent investment in a 70ha pivot to add to his initial 100ha pivot!

Before installing monitoring equipment, Victor was irrigating his whole

pivot every day to accommodate a short 8mm rootzone. As the soil organic matter increased, Victor used his monitoring equipment to water on a 2-3 day schedule resulting in deeper rootzone depth 30mm, which increased the amount of water readily available to the plant.

Victor sleeps easier now knowing that he has made his irrigation system more robust; being able "top up" his soil prior to predicted hot periods and have pastures that can handle better handle any "downtime" problems. ■

*For more information on soil moisture monitoring at [www.lwa.gov.au/downloads/publications\\_pdf/PR050832.pdf](http://www.lwa.gov.au/downloads/publications_pdf/PR050832.pdf)*



*Centre pivot at Victor Rodwell's farm*

# GOOD NUTRITION DURING HOT WEATHER

**Good nutrition** is always important, but is particularly important during hot weather.

Remember that hot weather affects a cow in two important ways:

- It reduces her appetite (and energy intake) by 10-20%, and her ability to digest and absorb the nutrients in the feed she eats
- It increases her daily maintenance energy requirements, because, in addition to maintaining normal metabolic functions, she must actively burn energy trying to keep cool.

These impacts are the crux of our challenge in managing the nutrition of cows in hot weather.

Some points to keep in mind when looking at your summer nutrition program are:

- Make sure your cows have access to plenty of cool drinking water wherever they are during the day
- Cows eat less overall, so increase the energy density of your diet where possible. More starch or added fat in the diet can be useful tools.
- The risk of ruminal acidosis is increased during hot weather by several factors:
  - \* Cows prefer to eat in 'blocks' in the cooler times of the morning and evening each day in hot weather,
  - \* Cows tend to select against low-quality forage / fibre, and
  - \* The natural buffering system the

cow relies on to combat ruminal acidosis, doesn't work as well in hot weather

- Feeding high quality and highly palatable forage fibre sources in the diet that help maintain a stable rumen, but still contribute energy rather than just gut fill, is essential in hot weather. (Check feed quality through lab. analysis if unsure)
- Feed higher quality protein sources in the diet. Higher 'by-pass' protein sources are desirable. Consult your nutrition adviser.
- Cows lose enormous amounts of potassium in hot conditions through sweating, and excrete more sodium through the urine. Magnesium requirements may also be higher. Consult your nutrition adviser about whether you should supplement the diet with extra sodium, potassium and magnesium
- Supplementation with a buffer is good insurance during the hot season. Other feed additives such as rumen modifiers, yeast and yeast metabolites, betaine and niacin, also have potential to assist cows in hot weather. Consult your nutrition adviser for more information.
- Offer cows multiple feeds throughout each day to help stimulate feed intake
- Maintain a consistent daily feeding routine, making any changes to grain /

concentrate feeding rates gradually

- Ensure mixed rations are well mixed to limit separation of long and shorter fibre particles
- When feeding out quantities of forage or a PMR to your herd, ensure all cows get equal access. If using feed troughs, ensure they are clean
- Ensure feeding and loafing areas used are clean and dry, to minimize teat contamination with urine, dung, and dirt

Consult your nutrition adviser to develop a summer nutrition program, specific to your circumstances.

Finally, remember that the hot season isn't over yet! Stay on alert. Keep a close eye on the weather for looming excessive heat load events and check your cows breathing rate each day. If your cows' breathing rate is more than 70 breaths per minute, cows are starting to struggle. If it is more than 80 breaths per minute this indicates that cows are under severe heat stress and you need to ramp up your cooling strategies further.

For more information, visit Dairy Australia's website [www.coolcows.com.au](http://www.coolcows.com.au), refer to the Cool Cows booklet or contact your local Dairy advisor. ■

~ Dr. Steve Little, *Grains2Milk* program leader for Dairy Australia.

**Further copies of the 'Cool Cow' booklets are available from Western Dairy**

## Sown some oats?

As farmers explore opportunities to produce more home grown feed, many are considering the role of oats as a source of valuable early feed after the break (funny how the wheel turns!).

After 10 years of sowing early oats dry in late March/early April, Victor Rodwell has developed a system that he estimates provides an extra 1 t DM/ha of highly valuable feed at the start of the season.

Like all of his inputs, Victor's use of oats is very much part of his system that aims to ensure he is self-sufficient in forage, with sufficient feed reserves to handle any pivot irrigation problems over summer.

The higher water tolerance of oats ensures they handle false breaks better than ryegrass and clovers, and in low rainfall seasons, such as 2007, they can still produce a reasonable crop.

Victor uses Dalyup oats, an aggressive variety with big leaves and relatively high NDF, sown at 45 – 80 kg/ha with ryegrass if needed. The high NDF balances the ration when grazing early, high quality pastures.

A key to Victor's system is the second-hand 10m air seeder he uses to cover more than 10 ha/hour, making the process very efficient in time and fuel. ■

## fact sheets

All Fact sheets listed in this article are found in The Buying Feed information pack or on the Dairy Australia web site [www.dairyaustralia.com.au](http://www.dairyaustralia.com.au).

If you did not receive the Buying Feed information pack or would like more copies contact Steve Little: [slittle@dairyaustralia.com.au](mailto:slittle@dairyaustralia.com.au)

# Greener Pastures cereal silage crop

There is a great opportunity for WA dairy farmers to increase their farm profitability by using homegrown forage, whilst reducing the farmer's reliance on purchased feed. This has been demonstrated at the Greener Pasture project.

The Wyalkatchem wheat crop grown for silage at Vasse Research Centre produced an impressive 12 t DM/ha (43% DM) with an ME of 10.8-11 MJ/kg DM and CP of 9.1 – 9.9%. This cereal silage has provided a very cost, effective high energy feed for cows on irrigation over summer. Its lower CP% will balance the high protein content of irrigated perennial pasture, reducing the problems associated with excess nitrogen intake.

But the high quality and yield achieved did not happen by chance! It was a combination of careful planning decisions involving:- variety selection, pre-seeding preparation, weed and insect control, fertilizer, not grazing and cutting later at the soft dough stage.

Total cost of production was \$166/t DM, which equates to a very favourable energy cost of 1.52 c/MJ compared to other feeds.

The table below shows the relative energy cost for cereal silage and other low protein cereals.

Feed	\$/t wet	\$/t dry	ME MJ/kg DM	c/MJ
Cereal silage	96	166	10.9	1.52
Barley	200	227	12.5	1.82
Wheat	300	341	13.5	2.53
Oats	200	222	10.5	2.12

The attention to detail has certainly paid off at Vasse; other cereal silage crops in the South West have yielded less than 6 t DM/ha with ME on average 9.5 MJ/kgDM.

A Cereal Silage field day will be held later in the year, with Dr Joe Jacobs relaying his experience from the 3030 project in Victoria. ■

*Full management and costing details of the Greener Pastures cereal silage crop are available from Fact Sheet on Greener Pastures website.*  
[www.agric.wa.gov.au/greenerpastures](http://www.agric.wa.gov.au/greenerpastures)

## A place for brassicas crops?

Following the success of his brassica turnip crop last season, Tutunup farmer Oscar Negus Jnr is again feeding an irrigated turnip crop as part of his summer ration this year.

Brassica crops (turnips and rape) are a high energy and protein, low fibre feed, ideal for high milk production when fed with grain and pasture silage. With potential for growth rates of over 100kg DM/ha /day and 11.5 MJ ME/kg DM and 26% CP, brassicas could have a role in WA irrigation systems.

Brassicas are exceptionally efficient in their use of water and nitrogen.

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Forage	Water use efficiency t DM/ML irrigation	Nitrogen use efficiency kg Dm/kg N
Annual ryegrass	8	66
Forage rape	10	151

It is important to introduce the herd slowly to brassicas to allow the four to five days necessary for the rumen bugs and the cows to adjust. Try to avoid feeding brassicas at more than one third of the cows' diet to avoid potential acidosis and nitrate poisoning.

Oscar planted 20ha of Hunter variety turnip on 6 December 2008, which was ready to start grazing on 3 February 2009. The brassica is fed between

## For Further Information

The aim of this Feed Trough publication is to provide dairy farmers with information as to where they can find more about feedbase research & management in WA and other dairy regions, so as to provide opportunities for their business.

Throughout this publication a number of national Dairy Australia Feedbase Projects are referenced that have a wealth of information available on their websites:

### Greener Pastures

[www.agric.wa.gov.au/greenerpastures](http://www.agric.wa.gov.au/greenerpastures)

### FutureDairy

[www.futuredairy.com.au](http://www.futuredairy.com.au)

### Project 3030

[www.dairyextension.com.au/project3030.asp](http://www.dairyextension.com.au/project3030.asp)

### Dairy Australia

[www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)

### Western Dairy

[www.westerndairy.com.au](http://www.westerndairy.com.au)

## LET US KNOW...

Are you growing or thinking of growing cereal silage or brassicas - then let us know. We would like to organize feed test (ME or energy, Crude protein, and fibre) and estimates of yield. Not only would this be invaluable to your feeding decisions, but it will help others see the value of these new crops in their feedbase planning.

### Please contact Dario Nandapi:

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milking in the afternoon to his early lactation herd (milked 3 x per day), who will graze perennial ryegrass and millet after other milkings.

After the milkers have grazed the crop 4-5 times, dry cows will be used to graze the bulbs before spraying out and reseeding to perennial pasture in late May. Oscar is very happy with using a brassica crop as a cleaning crop as part of his pasture renovation under the pivot. ■