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Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

FEED TROUGH

Funded by Dairy Australia and your Regional Development Program

Western DAIRY

AUTUMN BREAK

by John Lucey, Department of Agriculture & Food WA Dairy Team Leader

We can learn from the tough experience of 2009's very late break by planning now to be in a position to make the most of the 2010 break – whenever it comes.

Making the most of the break starts the season before with many farmers now using the system developed at the Vasse Research Centre of gradually reducing grazing pressure at the end of the season, to enable the majority of paddocks to set seed. At Vasse, we have reduced our need for expensive reseeding from 100% to an average of 33% of paddocks (being the ones identified as having low seed set from monitoring over summer).

Naturally seeded paddocks can produce an extra 1 t DM/ha of very valuable feed in the first two months compared to reseeded paddocks – valuable feed at any time but even more so with a late break.

Feed your soil to feed your pastures to feed your cows. If your soil pH is less than 5.5, then you need to apply lime before you consider fertiliser (see separate article). If Phosphorous is required, wait until 3 weeks after germination to optimise pasture response.

Once the break comes, it is important to resist the temptation to graze that "green pick". Restrict your herd to a few sacrifice paddocks—generally the ones where you have been feeding the milkers over summer—until the majority of the other paddocks have reached the 2-leaf stage. You may need to renovate or reseed these sacrifice paddocks once the rest get moving.

If an early break, pastures will recover well after the first grazing so a quick grazing starting when most paddocks are at the 2-leaf stage will open the pastures up, encouraging tillering and ensuring your first paddocks are only just past 3-leaf at the start of the second rotation.

However, if a late break like 2009, pastures will be slow to recover so start grazing at a slower speed to ensure pastures have sufficient time to grow three leaves before the second grazing. With late breaks, it is important to apply your nitrogen fertiliser immediately at the break as the colder soil conditions will reduce the normal nitrogen mineralisation from soil, seen with earlier breaks.

Competition from other species will limit the performance of ryegrass pasture. Strategic control of broadleaf weeds can be easily achieved through spray-grazing at about six weeks after germination. ■

From the Editor's Desk

Western Dairy is conducting two significant feeding management learning opportunities this autumn.

A full day workshop on feed conversion efficiency at Abbey Beach, Busselton on March 17, and is being offered to all WA dairy farmers with compliments of Western Dairy, using WA dairy farmer levy funds. The workshop features Dr Lean Lean, Dr Steve Little and Dr Dario Nandapi and is an exploration of the opportunities to increase feeding efficiency and farm productivity. It runs from 10am to 3pm and includes a light lunch.

Meanwhile, the 4-day Feeding Finesse training seminars are back, commencing early April, led by Dr Peter Rosher and Dr Dario Nandapi. The cost of $880 is fully reimbursable through the FarmReady training grants. Participants will gain nationally recognised dairy training accreditation through the National Centre for Dairy Education Australia (NCDEA).

Registration forms for both events are available from **Western Dairy PO Box 341 Mundijong WA 6123 P: 08 9525 9222 F: 08 9525 5008**

Learnings from Tasmania...

by Richard Rawnsley, Beyond 2012 Project

Dairy systems in Tasmania are heavily reliant on perennial ryegrass pastures. Perennial ryegrass provides over 70% of the feed source for dairy cows in Tasmania, and its productivity, persistence and quality depend on good grazing management. By optimising pasture performance, the dairy farmer is more likely to maximise farm profitability. However, farmers are also now facing a number of external challenges that potentially affect the cost and/or productivity of pasture-based dairy systems.

These issues are currently being addressed through the Beyond 2012 Project; a Tasmanian based initiative managed by the Tasmanian Institute of Agricultural Research (TIAR) Dairy Centre, University of Tasmania, and funded by Dairy Australia. This project builds on the recently completed 2012 projects where annual pasture consumption targets of 20t under irrigated and 12t under rain-fed conditions where explored at a paddock, farmlet and farm system level. The cool temperate dairy regions of Tasmania are widely recognised as an ideal climate to reach these targets. Biophysical modelling has shown that, under irrigated conditions, pasture production between 23 and 25t DM/ha/year and 10 and 16t DM/ha/year under rain-fed conditions is achievable. An analysis of pasture consumption being achieved on farm has shown that the average annual pasture consumption is approximately only 50% of the potential with some farms achieving less 40% and other up to 80%. The Beyond 2012 project will address the issue facing both groups of farmers through as series of research, development and extension activities. Research activities are focused on providing a greater understanding of feed base principles while aiming to improve the efficiency of inputs within the system. Research has commenced investigating differing approaches to managing post grazing residuals

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Intercropping: a new option? p3

High Rainfall Legumes

by Ron Yates, DAFWA, & John Howieson, Murdoch University

Nitrogen fixation by legumes offers a means of improving productivity without increasing production costs. Legumes provide residues high in nitrogen that enrich the soil to improve the production from subsequent crops, as well as supplying a high protein diet to grazing animals. This is a big attraction to farmers in that expenditure on nitrogenous fertilisers is reduced, an issue that is becoming more relevant in today's farming with increasing oil prices leading to higher nitrogen fertiliser costs.

Legumes must be inoculated with the correct strain of rhizobia (or Group) for optimum nodulation and maximum nitrogen fixation. Native strains of rhizobia are sometimes present in soil; however they are generally inefficient at fixing nitrogen compared with specialised commercial strains of rhizobia, which are continually being monitored and improved by the National Rhizobium Program (NRP) based at Murdoch University.

In 2009, an experimental field site was established at Boathaugh Estate, Karridale, in the south-west of WA to evaluate nitrogen fixation on a range of crop and pasture legumes mostly new to the area. Measurements were taken on efficiencies of inoculants, inoculation technologies and importantly, the overall herbage production of the plants. This has provided valuable new information on potential alternative legume species that could be grown in the area, particularly in a difficult season such as 2009.

The alternative legumes at the site displayed enormous potential to be developed in the region. The annual legumes included hard-seeded French and yellow serradellas, gland and Persian clover, Biserrula and a very new species, Lotus ornithopodioides. The perennial legumes included new cultivars of Lotus corniculatus and lucerne, Sulla (Hedysarum coronarium), and the sub-tropical Lotononis bainesii. Crop legumes evaluated consisted of peas cv. Kaspa and lupins cv. Mandalup.

The challenge is now trying to fit alternative pasture species into the farming system, either incorporated as grazing pastures, or mixed with grass/cereal for hay or silage production. Future studies at Boathaugh Estate, depending on research funding, will evaluate second year regeneration of the annual legumes, the production of the established perennial legumes and nitrogen transfer into grass pastures. In addition, we propose to measure protein and energy levels achieved with various mixes of alternative legumes and cereal silage, and how these compare to the already tried pea/wheat silage. ■

...from Tasmania

[from P1]

with respect to milk production, pasture quality and pasture regrowth while a field study quantifying the interactions between grazing interval, grazing intensity, irrigation and nitrogen inputs on pasture production, plant persistence and herbage quality has been established. The TIAR dairy centre is working collaboratively with a small group of farmers that are achieving high level of pasture consumption on farm to explore approaches to further improve farm profitability. This includes an examination of the use of high sugar grasses, approaches to improve nitrogen and water efficiency and the exploration of winter and summer forage options. Both participatory research and whole farm system modelling activities are being used to explore the adaption of new techniques within these farms. A series of technological tools and manuals to assist in daily on-farm decisions are being developed as part of the Beyond 2012 project which will be made available online. The Beyond 2012 webpage is scheduled to be online by March/April 2010 at www.tasdairyprojects.com.au. The website will communicate project findings and act as a database for all project resources. ■

FIELD DAY
Intercropping with Maize & Brassica

Negus property, Tutunup

Thursday 11 March, 10.30am – 12.30pm

Followed by sausage sizzle

For more details John Lucey 0429 889 083

INTERCROPPING:

a new option for increasing feed?

The Negus family from Tutunup, WA, are always on the lookout for opportunities to improve the productivity from their home-grown feed base.

With over 1500 milkers run on their 360 ha (235 ha irrigated) milking platform, they have previously integrated forage turnips (variety Hunter) into their system as a successful cleaning crop that persists well into June when their traditional millet deteriorates.

In 2010, they are trialling intercropping maize with a brassica after they read about the results from Future Dairy growing these two crops together to increase forage yield in autumn and provide options for farmers to reduce feed cost.

Over the autumn/winter, the Future Dairy intercropped maize and brassica yielded 17.8 tDM/ha using just 2.7 ML, making it a very water efficient crop. This is twice the average amount of pasture utilisation from short rotation ryegrass in the same period.

While the Future Dairy crop was sown in late February, the Negus crop was sown in early January. Using Future Dairy recommendations, the maize was sown at a higher than normal density using 120,000seed/ha at 70cm row spacing. The expectation is that the first grazing after eight weeks will yield 5 - 7 t DM/ha, with the maize being over 1.2 m high. The maize will not regrow, but by planting the maize at 70cm rows, the brassica will have established well and continue to grow for further grazings.

With only one grazing from the maize, it is important to control costs so a cheap maize variety was sown. ■

Above: Future Dairy researcher, Rafiq Islam in an intercropped maize and brassica trial.

GRAZING MANAGEMENT: the forgotten factor with N fertiliser?

from the Greener Pastures team

There is still much reluctance among farmers and advisors to accept the compelling evidence that grazing of ryegrass pastures by leaf stage (LS) should be the determining factor in setting grazing interval.

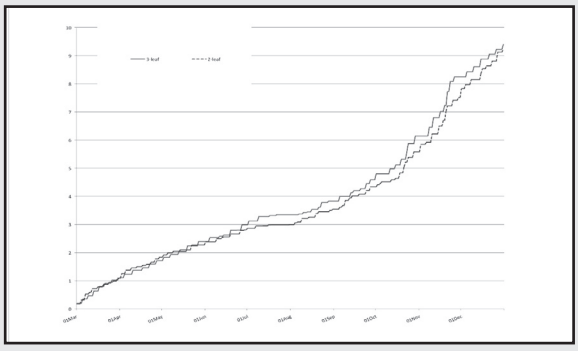
Work by Bill Fulkerson, Danny Donaghy and others has shown that ryegrass pasture growth rates (PGR) and total pasture production per year are maximised and pasture quality optimised if ryegrass pastures are allowed to reach the 3-leaf stage. Put simply, the three live leaves per ryegrass tiller each take the same time to develop but get progressively bigger. For ryegrass grown to 3 leaves, the 1st leaf contributes 15-25% of total pasture biomass, the 2nd leaf 30-35% and the 3rd leaf 40-50%. There is little difference in ME content between the 1st and 3rd leaf.

The Greener Pastures research team suggest that increased use of N fertiliser on Australian dairy farms frequently results in farmers reducing grazing interval by increasing rotation speeds to manage the higher pasture biomass and/or "canopy closure" associated with higher pasture growth rates. The Greener Pastures latest work shows that the increase in rotation speed cancels out part of the potential pasture growth response from N fertiliser, and the Greener Pastures team are investigating the 'pros and cons' of grazing ryegrass at 2- versus 3-leaves to maximise N fertiliser use.

Last year we had a severe problem with crown rust on our centre pivot irrigated perennial ryegrass and suspect it was the primary cause of reduced yield for the 3-leaf herd. This year rust was becoming an issue again before topping in late December, which initially reduced the incidence of rust but once again, by late February we are seeing rust at grazing across most 3-leaf paddocks. We are monitoring the situation closely as we feel this could be the single biggest obstacle to later grazing over summer but rust has had little impact after topping.

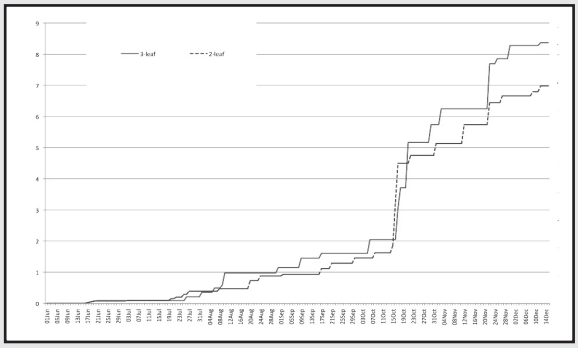
Our results lead us to the following suggestions on grazing management and N fertiliser use:

1. Pasture quality and quantity for grazing by dairy cows is optimized by grazing at 2 ½ - 3 leaves.
2. Only graze ryegrass earlier than 3 leaves per tiller if pasture is being wasted. Try not to graze earlier than 2½ leaves.
3. Fast rotations (grazing at 1½ or 2 ryegrass leaves) can be expected to result in considerably less pasture being produced compared to slower rotations (grazing at 2½ to 3 ryegrass leaves)
4. Fast rotations (grazing at 1½ or 2 ryegrass leaves) result in pasture that is poorly balanced to the needs of the dairy cow, with excess protein but low sugar levels. High urea (=N) losses in urine can result in pasture scalding and have an adverse environmental impact.
5. If canopy closer is consistently occurring before 2½ leaves, the first response should be to reduce the amount of N fertiliser applied, rather than to speed up your rotation. ■



Perennials:

Pasture grazed is for 10 months only. If we assume another 2tDM/ha for Jan/Feb, the total would come to about 12 t DM/ha for both treatments. Note that half the pivot was being renovated in the autumn of 2009.



Annuals:

These figures are for grazed pasture only. In addition we harvested silage from the annual paddocks (3.9 and 3.3 t DM/ha for 3-leaf and 2-leaf treatments), bringing the total pasture harvest for annuals to 8.4 and 7.0 t DM/ha in 2009.

For Further Information

National Dairy Australia Feedbase Projects have a wealth of information about feedbase research & management in WA and other dairy regions available on their websites:

Greener Pastures
www.agric.wa.gov.au/greenerpastures
FutureDairy
www.futuredairy.com.au
Project 3030
www.dairyextension.com.au/project3030.asp
Western Dairy
www.westerndairy.com.au
Dairy Australia
www.dairyaustralia.com.au
www.myG2Mfeedreport.com.au
www.coolcows.com.au
Tasmanian Dairy Demonstration Farm www.tddf.com.au
Beyond 2012
www.tasdairyprojects.com.au

Keep us in the picture!

Are you growing or thinking of growing cereal silage or brassicas - then let us know.

Please contact
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Which Hay to Buy?

It can often be difficult to know which hay is the best to buy. Hopefully, by using the new Feed Report tool (www.myg2m-feedreport.com.au) developed by Dairy Australia this can be made easier as the following example highlights.

A farmer near Busselton has the option of buying pasture hay from his neighbour or purchasing oaten hay from a hay trader.

The neighbour is selling hay at $75 per roll and will deliver it from the paddock. On looking at the hay it had lots of seed head and was therefore cut late. The rolls were not weighed but estimated to weigh 400kg.

Oaten hay was available at $182/t delivered and had the following feed test result.

- 8.9 MJ of ME
- 7.9% crude protein
- 89% Dry Matter

Before feed testing and weighing the neighbours hay, average hay results of 8.0 MJ of ME, 9.5% crude protein and 85% dry matter were compared to the oaten hay quality using the Feed Report.

A summary of the results (which are emailed to you when you use the feed report web site) obtained is printed below.

This Feed Report allows you to compare alternatives on their feed value. Remember – it's not what you pay for your feed, it's what you get for your money that counts.

As the oaten hay was 0.5c/MJ (22%) cheaper than the pasture hay he decided to buy the oaten hay without feed testing or weighing his neighbours hay as there was a big difference in price per MJ. Even though protein was more expensive in the oaten hay, energy was deemed more important for milk production. ■

Purchase Price (if considering buying this feed)	Value – looking beyond the price tag
NEIGHBOUR'S HAY	**NEIGHBOUR'S HAY**
$187.50 /t as fed	22.1 c/kg DM
$220.59 /t DM	2.80 c/MJ ME
	2.32 $/kg CP
OATEN HAY	**OATEN HAY**
$182 /t as fed	20.4 c/kg DM
$204.49 /t DM	2.30 c/MJ ME
	2.59 $/kg CP

For more information, see the Feed Report tool developed by Dairy Australia: www.myg2mfeedreport.com.au

Making smarter use of nutrients

by John Lucey, Department of Agriculture & Food WA

Making smarter use of available nutrients and more efficient use of fertilisers to increase profitability and environmental sustainability has been one of the major aims of the Greener Pastures project.

With five years of Greener Pastures results, plus six years of results from the previous Vasse Milk Farmlets project, there are some clear findings on how farmers can make smarter use of nutrients.

It is a waste of money to apply fertiliser to acid soils due to lower availability of nutrients. Apply sufficient lime to raise soil pH in top 10cm to 5.5 or greater - apply 5 t/ha lime if pH below 5, apply 3 t/ha if pH 5 -5.5,1 t/ha if pH 5.5 – 6 and no lime if pH above 6.

Many dairy farmers are now confident to use Greener Pastures recommendations to reduce their P fertiliser. It is not profitable to apply P fertiliser when none is required. If no fertiliser P is applied, soil tests decline slowly, they do not crash, however, if you do not apply P, do not forget sulfur requirements, especially after a wet winter.

Critical Colwell soil test phosphorus levels (related to 90% of maximum pasture yield response to applied P fertiliser) vary with the ability of the soil to sorb phosphorus, as measured by Phosphorus Buffering Index (PBI), the new national standard procedure, or Phosphorus Retention Index (PRI) – see below: *Table 1: Critical Colwell soil test phosphorous levels for soils of different phosphorus sorption capacity* .

PRI [L/g]	PBI (no units)	Critical Colwell soil test P (mg/kg)
Less than 0.35	Less than 5	10
0.35 – 1.0	5 – 10	15
0 – 2	10 – 15	20
2 – 9	15 – 35	25
9 – 28	36 – 70	29
28 – 87	71 – 140	34
87 – 275	141 – 280	40
275 – 1680	281 – 840	55

Potassium soil levels are difficult to monitor by soil testing as urine patches, containing high K, greatly affect soil test K values. Tissue testing is being increasingly used as a more accurate guide for when to apply fertiliser K.

Clover is very sensitive to K deficiency, so deficiency results in clover rapidly disappearing from the pasture. By contrast, ryegrass is better at acquiring K from soil than clover and rarely shows K deficiency, regardless of the soil test K value.

For intensely grazed ryegrass pastures, tissue test selected paddocks through the growing season and apply 10 kg/ha K if the test shows less than 2% K for legume pastures.

Soil testing for sulfur on sandy soils in the high rainfall area is not reliable as sulfur can leach below pasture roots. In wet years apply fertiliser S to pastures on sandy soils after July each year, either as part of an N:K:S blend as they do at VRC or as a spring gypsum dressing. ■