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Breaking through the "Grass Ceiling" P2

If buying wheat, make sure it's SFW1 P4

Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

FEED TROUGH

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Western DAIRY

Advantages of cereal silage

Disadvantages that need to be well considered include:

Ian and Ruth McGregor have followed the 3030 project with interest and were keen to investigate if cereal silage could provide a valuable home grown feed for their south west WA dairy business. Ian and Ruth took the opportunity to quiz Dr Joe Jacobs when he presented at the 2009 Western Dairy DID event and used a local cropping consultant for agronomy advice.

A crop of Arino wheat was grown in 2009, yielding 5.7 tDM/ha with ME of 9.7 MJ/kg DM and 7.2% crude protein. Then a triticale crop was grown in 2010 yielding 5.3 tDM/ha with ME of 9.8 MJ/kg DM and 7.6% crude protein. While a superior baler with a pre-cutter was used in 2010, the season finished early and the crop did not reach its potential.

Ian and Ruth found that cereal silage certainly fits into their system, with the following benefits:

- Able to use poorer/higher country not best suited for grass silage and achieve reasonable feed yields.
- Different timing of seeding, spraying, harvesting to pasture silage so you can spread your time effectively and not compromise your pasture silage quality (something we'd found from growing pasture silage on lease blocks in the past)
- No irrigation necessary
- Greater control over feed quality and eliminates exposure to volatile bought in feed costs. The overall quality of our ration improved with the use of the cereal silage instead of bought in hay and we saw that best in the vat and cow condition.
- Good for lead feed cows. Low K means we don't need to use anionic salts in grain for springers and still don't get milk fever.
- Spreads the feed costs over the growing season and eases summer cash flows.

Disadvantages that need to be well considered include.

- Protein is low and needs to be counterbalanced in your ration
- Need to rotate crops, as 2 years is the maximum to manage disease problems. Ian and Ruth will sow a legume crop this year and achieve higher protein which will balance ration better but with a lower yield. In hindsight, it would have been best to start with three areas rotated from the start
- It was difficult to ensile in bales. Definitely need a pre-cutter and inoculate.

Recommendations

- Go for a leafy variety for dual purpose grazing and ensiling
- Adopt a scientific approach and use the advice of an agronomist for your first crop and follow it.
- Don't cut corners. Accept that you will need to do double knock down, weed control, spray your insects and fertilize to its potential or you will be disappointed.

A paradigm shift in thinking

C4 grasses such as Kikuyu and Couch have the potential to greatly increase the amount of energy harvested/ha compared to the cooler season C3 perennial and annual ryegrasses. Model simulations predict that irrigated kikuyu has the potential to grow more than 30t DM/ha compared to 12-14t DM/ha for irrigated perennial ryegrass in WA, with dryland kikuyu able to produce more than 15t DM/ha compared to 8t DM/ha for annual ryegrass.

Milk production/cow will be less, but milk production/ha will be far greater in a system that can grow and utilise warm season C4 grasses. In addition, they can be coupled with C3 annual grasses to provide better forage growth in winter and early spring, when C4 grasses produce very little.

Nitrogen on Dairy Farms P3

Breaking through the "Grass Ceiling"

Précis of paper presented by John Roche and Richard Rawnsley at Dairy Innovators Forum.

As part of his presentation at DIF, John Roche challenged Australian dairy farmers that they have the potential to increase current pasture utilisation by 50% through attention to some basic management practices.

1. You can't manage what you don't measure

With pasture yield variation much greater (up to 100%) within farms than between farms, there is huge potential to increase pasture utilisation by renovating and re-seeding the lowest yielding paddocks. Weekly pasture monitoring farm walks are essential to maximise pasture harvested.

2. Optimum rotation length

Most have heard the saying "Grass grows grass", which refers to the fact that the longer pasture is left to recover following grazing (rotation length), the more grass it will grow.

Greener Pastures confirmed that grazing annual ryegrass at the 3-leaf stage increased pasture harvested by 23% than by grazing at the 2-leaf stage. This equates to between 1-2 t DM/ha, equivalent to between $25,000 to $50,000 (assuming $250/ t feed costs) for a 100ha farm.

One of the reasons often given for grazing pasture before 3-leaves is to ensure high feed quality for maximum milk production/cow. This is incorrect, with milk production/cow from pasture not decreasing with advancing leaf stage up to the 4th leaf (at least for winter/early spring).

3. Optimum grazing residual

Grazing pastures to 4-5 cm residuals consistently, maximises pasture growth, utilisation and quality. Tasmanian research found there was no disadvantage to estimated DM intake or milk production by grazing to 4 vs 5 or 6 cm, providing options to graze to lower residuals to increase rotation length without reducing quality.

4. Stocking rate

NZ research suggest an increase in pasture yield of 1 t DM/ha and an increase in pasture utilisation of 2 t DM/ha for each additional cow/ha, highlighting the importance of stocking rate for maximising pasture production and utilisation.

5. Supplements

While supplements don't directly affect the amount of pasture grown or harvested, generally farms feeding greater amounts of supplements harvest less pasture possibly as a result of changes to pasture management to accommodate greater per cow production.

Cereals Perform Well at Yoongarillup

Last year Neville, Elaine and Garry Haddon decided to trial a cereal crop in some of their weedy, well drained, sandy paddocks.

The crop was compared to annual ryegrass. The Haddons were so impressed with the results that this year they plan on growing 260 hectares of cereals (wheat and triticale) to make into either silage or alkalage.

A 40 hectare site was broken into four 10 hectare paddocks. Two paddocks were sown to a mix of a new diploid annual ryegrass (30 kg/ha) and sub clover (3kg/ha). The remaining two paddocks were sown in June to Speedy triticale (100kg/ha) and Wyalkatchem wheat (100kg/ha). Seeding was late because the paddocks were sprayed twice to reduce weeds (barley grass, brome grass, silver grass, corkscrew, couch and flatweed).

The cereals were fertilised (MAP 100kg/ha, 11 kg of N/ha, 23 kg of P/ha and 2 kg of S/ha) and Impact was added to stop root diseases. This was banded below the seed. The pasture was fertilised with 150 kg of Summit Dairy (22 kg of N/ha, 12 kg of P/ha, 20 kg of K/ha and 14 kg of S/ha). The pH of the paddocks was 4.8, so they were limed at 2.5t/ha.

Lustre, a post emergent herbicide, was also used in the cereals to control weeds. All of the paddocks then received the same amount of fertiliser during the growing season (97 kg of N/ha, 19 kg of K/ha and 28 kg of S/ha).

The pasture paddocks were grazed once in August by dry cows. All of the paddocks were then cut for round bale silage in spring. The table below shows the yields of each paddock. Both cereals out yielded the pasture paddocks, and the Haddons commented that the cereal paddocks also had less weeds. The table also outlines the costs associated with each crop which includes seed, treatments and fertiliser but did not include labour or machinery.

Even though last year was a poor growing season the Haddons still thought the cereals outperformed pasture yields from previous good seasons in those paddocks. They are looking forward to seeing how the cereals perform in a good season where they can be sown much earlier than last year.

Table 1. Summary of Results

Paddock	Crop	Silage Yield (t DM/ha)	Grazing Yield (t DM/ha)	Total Yield (t DM/ha)	Cost $/ha	Cost $/t DM	PBI	Colwell P
1	Pasture	0.2	0.5	0.7	378	540	26	22
2	Triticale	3.75	0	3.75	321	86	20	20
3	Pasture	0.75	0.5	1.25	378	302	49	22
4	Wheat	3	0	3	386	129	96	44

Nitrogen on Dairy Farms

FutureDairy's research has found that a complementary forage system (CFS) achieved the most efficient use of nitrogen at the 'whole farm level,' compared with other dairying systems used around the world.

A CFS involves allocating a portion of the farm to intensive forage production to increase productivity from home-grown feed. It usually involves growing forage crops, sometimes double or triple cropping. Crops are selected to complement each other. For example they may include a legume for nitrogen fixation, a bulk crop such as a cereal or maize for silage, and a brassica (forage rape) to break pest and disease cycles.

FutureDairy project leader, Associate Professor Yani Garcia, said the research – conducted by postgraduate student, Santiago Farina – measured the nitrogen efficiency for FutureDairy's CFS farmlet study and compared the results with other dairy systems studied throughout Australia and internationally.

The CFS in FutureDairy's trial at Camden near Sydney involved allocating 35% of the farm for double or triple cropping, with the rest of the farm used for intensively managed pasture.

Under this CFS, 45% of all nitrogen entering the farm was converted into milk. This compares with an average of about 26% for Australian dairy farms and about 16% overseas.

"At 45% nitrogen efficiency, FutureDairy's complementary forage system converted more than one and a half times the amount of nitrogen into milk than the average for Australian dairy farms," said Assoc Professor Garcia.

The key to the nitrogen efficiency of the CFS is the higher amount of milk produced from home-grown feed. This came from the combination of the bulk crop (eg maize) and a legume crop and the fact that the pasture area in the CFS had high yields (20 t DM/ha) given the level of nitrogen fertiliser applied (250kg/ha).

Overall the CFS utilised 24.8 t DM/ha/year which meant that the nitrogen entering the farm as bought-in feed was minimised with cows receiving about 1t DM concentrates/cow/lactation. Compared with other intensification systems such as relying heavily on purchased feed, the CFS has a lower potential environmental impact, in terms of producing more milk per unit of nitrogen entering the farm.

"The CFS gives dairy farmers another option for increasing their farm productivity in a sustainable way," Assoc Professor Garcia said.

For further information contact Assoc. Prof. Yani Garcia at sergio.garcia@sydney.edu.au

Santiago Farina compared dairying systems used around the world for their nitrogen efficiency at the 'whole farm level.'

Feed Efficiency in dairy cows

John Lucey (update from Dairy Science in Action Symposium, Ellinbank)

While not strictly a "feedbase" topic, the ability to use genetic markers to select for improved feed conversion efficiency (FCE) in dairy cows offers tremendous opportunity for increasing farm profitability.

Collaborative research being undertaken by Yvette Williams (DPI) at Ellinbank, Victoria and by Kevin McDonald (DairyNZ) at Taranaki, New Zealand could add $80 million NPV to the Australian dairy industry, or 390 million litres of milk for the same quantity of feed.

The aim of the project is to reduce the amount of feed required to produce a litre of milk by genetic selection using DNA genetic markers. In addition, the relationship between FCE in lactating cows and methane emissions will be established, the extent of emissions in low and high feed conversion efficiency animals will be established.

Over 900 6-month old calves from commercial Victorian herds have undergone individual feed intake and growth rate testing for 90 days at the DPI Rutherglen feedlot. Sixty calves with the highset and 60 with the lowest FCE (measured as Residual Feed Intake (RFI) = net DMI adjusted for predicted feed requirements) have been purchased by DPI.

The first 60 heifers calved at Ellinbank in September 2010, with the following group due to calve in September 2011.

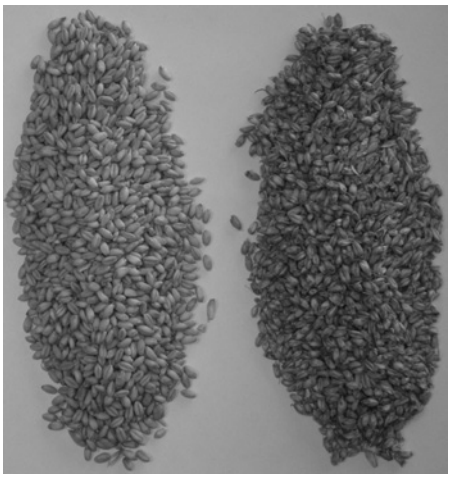
Initial results are promising with RFI heritability of 0.27, similar to magnitude of milk production, promising an opportunity for improvement through selection. The low FCE animals had an RFI of -0.67 compared to +0.69 for the high FCE animals, meaning the most efficient calves (the lowest RFI) eat about 1.5 kg less for the same daily liveweight gain.

While these initial results on calves are promising, ongoing research at Ellinbank will confirm whether ranking for FCE in calves is maintained when they are milking as cows. Additionally, any interaction between RFI and feeding levels will be investigated, as pasture-based herds are not always fully fed throughout lactation.

Finally, the mechanisms by which cows achieve high efficiency need to be explored, as there are numerous pathways that can lead to improved FCE, such as reduced maintenance requirements, reduced protein turnover, or a difference in the degree in which fat is stored in the body (which will affect reproduction).

Further information:
http://new.dpi.vic.gov.au/agriculture/dairy/dairy-science-in-action

If buying wheat, make sure it's SFW1



When ordering, specify exactly what you want (eg SFW1, pictured left). If you just order 'feed barley' you could be delivered FED3 wheat (right) – and be obliged to accept it.

Dairy farmers buying wheat for their cows are being urged to buy SFW1 quality wheat, rather than paying a lower price for lesser quality feed grain.

Dairy Australia's Grains2Milk program leader, Dr Steve Little, said the big money to be lost or gained when buying feed is in seeking quality, rather than haggling over a $10/tonne difference in the asking price.

"Never has this been truer than when buying grain than this year! And there are good deals on offer, " Dr Little said.

The national harvest of both wheat and barley were high but wet weather means that much of it was downgraded from milling and malting quality to general purpose and feed grade, which was available to dairy farmers at a significant discount.

"Just as oils aint oils, feed grain is not feed grain. There are many specific grades of feed wheat and feed barley and these can differ in their nutritional value for dairy cows," Dr Little said.

The different grades are defined by Grain Trade Australia (GTA), and outlined in the table.

When buying feed-grade wheat, stockfeed companies and the pig and poultry industries prefer to buy SFW1 grade wheat (Stockfeed Wheat Grade) and Dr Little recommended it as a good option for dairy farmers. It was currently selling at a discount of up to $60-75/tonne compared to ASW1 grade wheat (Australian Standard White Varieties), yet its test weight and screenings standards were not much different (see table).

"You may be able to save an additional $10-30/tonne by buying FED1or FED2 grade wheat (Feed Grade) instead of SWF1. But these grades don't necessarily offer better feed value for money because they have much lower test weights and higher screenings standards," he said.

Similarly for barley – Dr Little recommended sticking with F1 barley rather than risking the inferior quality standards that apply to the F2 and F3 barley grades. However there's very little difference between the price of feed wheat and feed barley this year, making wheat better value because it has a higher energy content.

"Of course you will only get SWF1 wheat or F1 barley if you specify it when you enter a feed purchase agreement.

"If you just order 'feed wheat' or 'feed barley' you leave yourself wide open. You could be delivered any of the GTA feed grades – possibly the lowest – and be obliged to accept it."

Dr Little reminded farmers to confirm verbal agreements with feed suppliers by mail, fax or email. An easy way to do this is to use the GTA Contract Confirmation form, available on Dairy Australia's website. This form can be used when buying any type of feed (not just grain), to specify quality, price, supply terms and any additional terms negotiated with the seller.

For more information visit www.dairyaustralia.com.au/Farm/Feeding-cows or contact Steve Little 0400 004 841 email slittle@dairyaustralia.com.au .

Grains2Milk is one of many examples of the dairy services levy at work. For more information on this project and other levy investments visit the Dairy Australia website www.dairyaustralia.com

GrainTrade Australia wheat and barley standards for 2010/11 season*

	Wheat					Barley		
Grade	**ASW1**	**AGP1**	**SFW1**	**FED1**	**FED2**	**FEED 1**	**FEED 2**	**FEED 3**
Max. Moisture (%)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Min. Protein (%)	-	-	-	-	-	-	-	-
Min. Test Weight (kg/hl)	74	68	70	62	55	62.5	60	55
Max. Screenings (% by wt)	5	10	10	15	15	15	25	60
Min. Falling No. (secs)	300	200	-	-	-	-	-	-
Sprouted (% by count)	Nil	Nil	-	-	-	-	5	5
Stained (% by count)	5	15	15	50	-	-	-	-
Field Fungi (count per ½ litre)	10	20	10	40	-	-	-	-

*(*extracted from GTA Grain Standards, 2010/11 Season on GTA website: www.graintrade.org.au)*

The FeedTrough is published by Western Dairy
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