A new grazing management strategy for Northern Dairy:

Part 2 Management of grazing intensity and pasture utilisation

Dr Marcelo Benvenutti
Research Scientist DAF Queensland

The Queensland Department of Agriculture and Fisheries (DAF) C4Milk team has developed a new grazing management strategy for tropical and temperate grasses and legumes for Northern dairy systems.

The new grazing management strategy called PUP grazing (PUP: proportion of un-grazed pasture) is based on the horizontal utilisation of all leaf material, leaving the stemmy and contaminated material behind (Diagram 1, Image 1). This grazing strategy provides a solution to the management of pastures with variable stem heights. The PUP grazing strategy allows you to consistently maximise cow productivity.

This article (Part 2) covers key principles on how dairy cows utilise the pastures offered and the implications for the management of grazing systems. The previous article (Part 1, Northern Horizons July 2017) focussed on pasture structure and how cows choose to selectively graze the pasture on offer.

The PUP grazing management strategy is an improved version of current grazing management rules. For example, the current rules for grazing ryegrass and kikuyu are based on grazing at 2 ½ to 3 and 4 ½ to 5 leaves respectively. The PUP strategy uses the same pre-grazing leaf stages, the difference is in the grazing intensity. Current recommendations target a five centimetre post-grazing residual. Our approach to this is completely different. We need to consider what the cow needs to achieve a high quality intake.

Each pasture type is different as demonstrated above with ryegrass and kikuyu. However the new grazing management approach is the same, using a set of principles based on current grazing recommendations for each pasture type, with the addition of new principles derived from new research being conducted at Gatton Research Dairy.

Targeting 100% horizontal utilisation of a pasture strip, excluding contaminated pasture clumps, consistently allow the milking cows to graze the top leafy stratum of a pasture, ensuring higher diet quality and larger pasture intakes. This is the basis of our new grazing strategy called PUP grazing.
Welcome to the third edition of Northern Horizons.

This edition contains the second article relating to some new grazing management strategies developed by the C4 Milk project, our lead R&D project for the northern dairy industry. These new grazing strategies, whose development have been led by Dr Marcelo Benvenuti, have a much greater emphasis on cow productivity within subtropical environments than current grazing management strategies. These strategies were recently reviewed at a senior scientist and adviser meeting on August 17th 2017, with the general conclusion they significantly add value to our existing practices.

As you would be aware, C4 Milk is funded by the Department of Agriculture and Fisheries Queensland and Dairy Australia. Both organisations have recently agreed to fund a new five-year project (subject to a three-year review). This is an excellent outcome and sets a solid R&D foundation for the northern Australian industry going forward.

This edition also contains an article reviewing outcomes from the Young Dairy Network. In summary, since 2009, YDN has delivered over 150 events to over 4000 participants. Key events during this time have been the maintenance of regional Operational Steering Committees ensuring strong project buy-in from young farmers, the delivery of three DairySage leadership programmes, over 50 editions of the YDN newsletter and six tours, with one of these being to New Zealand. On the Subtropical Dairy Board today, three of our directors have been past members of YDN.

From a Subtropical Dairy perspective, we have several workshops and activities planned over the coming months focussing on animal performance. These include delivery of Healthy Hooves, Euthanasia, Low Stress Calving, Rearing Healthy Calves and Heifers on Target.

On November 16 & 17, the proposed Young Dairy Network Strategic Steering Committee (myself, Jason McInnes, Jai Woolridge and Todd Brown) are here if you would like to talk to us about the Young Dairy Network.

Frances Hayden
Chair, Young Dairy Network Strategic Steering Committee

Welcome to another edition of the Northern Horizons. I hope this finds you all well and missing that dreaded flu bug that is doing the rounds. What a busy few weeks we have had here on the Downs with early silage, fast rounds on the ryegrass rotations, and non-stop irrigating for most farms. Rain would be a fantastic sight at present.

The Young Dairy Network regions have a few events coming up with a focus on Heifers on Target over the next few months. If you have ideas for other events, please contact your local Operational Steering Committee in your region.

There are changes currently occurring with the Young Dairy Network coordination team with Katina Trout (FNC NSW), Jo Srhoj (FNQ) and Viv McCollum (Sunshine Coast and Program Manager) moving on from their positions. I wish to thank all these people for their contribution to the network.

The proposed Young Dairy Network review is still to be progressed so we will be looking for your feedback about the network in time. In the meantime, the young farmers on the Young Dairy Network Strategic Steering Committee (myself, Jason McInnes, Jai Woolridge and Todd Brown) are here if you would like to talk to us about the Young Dairy Network.

Finally, I would like to say thanks to Viv McCollum for all her help and support over the many years with Young Dairy Network and being my mentor. It has been a great pleasure working with you and I wish you all the best with your new roles. Vive will continue to fill her position until the end of September, but don’t worry she is still involved with the dairy industry. Good luck Viv.

Thanks, and bring on much needed rain.

Frances Hayden
Chair, Young Dairy Network Strategic Steering Committee

Disclaimer: Sub-tropical Dairy Programme Ltd has endeavoured to ensure that all information presented here is correct. However, we make no warranty with regard to the accuracy of the information and will not be liable if the information is inaccurate, incomplete, out of date or not suited for individual circumstances. The content of this article should not be used as a substitute for seeking independent professional advice.

The hotlinks to other websites are provided as a service to users. We are not responsible for and do not endorse linked sites, nor are we able to give assurances regarding their content, operation or accuracy.
Pasture structure, forage quality and selective grazing

The key conclusions from the first article published in Northern Horizons in July 2017 were:

• The structure of both tropical and temperate grasses and legume pastures typically consists of a top leafy stratum and a bottom stratum with a high proportion of stems known as the bottom stemmy stratum (Image 2).

• The large difference in leaf to stem ratio between strata results in large differences in forage quality between strata. The nutritive value is much higher for the top leafy stratum compared to the bottom stemmy stratum, with higher crude protein and energy, and lower fibre concentrations.

• Dairy cows strongly prefer to graze the top leafy stratum and they only consume the bottom stemmy stratum once the top leafy stratum has been heavily depleted.

• Dairy cows will graze stem in preference to grazing pasture previously contaminated by either urine or faeces.

Grazing intensity, diet quality and forage intake

Dairy cows can achieve high levels of pasture intake and diet quality only when grazing the top leafy stratum (Diagram 1, page 1). A number of grazing studies have shown that intake, diet quality and milk production decline when cows are forced to graze the bottom stemmy stratum. For example, in a recent grazing study conducted at the Gatton Research Dairy in December 2016, results showed that when dairy cows were forced to graze the bottom stratum of lucerne pastures, forage intake, diet quality and milk production were decreased. The experiment consisted of four levels of pasture allocation in a partial mixed ration (PMR) feeding system (Table 1, Image 1). The pasture allocation for Treatment 4 was designed to leave five cm of pasture residue after grazing. However, the results show that cows refused to graze the pasture any lower than 25 cm. Instead of grazing the pasture down into the stemmy stratum, the cows severely decreased their dry matter and energy intake (Table 1). This was associated with a reduction in milk production of up to 1.6 litres per cow per day.

Using milking cows to achieve target residual pasture heights may compromise their productivity

In order to achieve optimum pasture growth and yield, target residual pasture heights of about 5 cm are currently recommended for some pasture species such as ryegrass, kikuyu and lucerne. It is therefore important to reduce the residue levels to 5 cm when they have accumulated in excess of this point. Pasture residues typically consist of stemmy and dead material accumulated at the bottom of the plant. As indicated in the previous section, if milking cows are forced to remove this bottom stemmy stratum their productivity will be compromised.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture allocation (kg DM/cow/day)</td>
<td>30.6</td>
<td>20.5</td>
<td>15.1</td>
<td>10.9</td>
</tr>
<tr>
<td>Post-grazing pasture height (cm)</td>
<td>39.1</td>
<td>34.1</td>
<td>31.5</td>
<td>25.4</td>
</tr>
<tr>
<td>Pasture intake (kg DM/cow/day)</td>
<td>9.3</td>
<td>8.5</td>
<td>6.9</td>
<td>6.4</td>
</tr>
<tr>
<td>ME intake (MJ/cow/day)</td>
<td>207.2</td>
<td>195.5</td>
<td>178.4</td>
<td>171.0</td>
</tr>
<tr>
<td>Proportion of un-grazed pasture (% of area)</td>
<td>9.2</td>
<td>10.1</td>
<td>2.9</td>
<td>0.7</td>
</tr>
</tbody>
</table>

### Table 1 Results of a grazing trial conducted at Gatton Research Dairy in December 2016 on lucerne pastures. The average pre-grazing pasture height was 54 cm.

### Image 1 Grazing trial conducted at Gatton Research Dairy in December 2016. The image shows cows grazing down lucerne pastures. Cows graze down the pasture both vertically and horizontally. The new grazing management strategy is based on the horizontal utilisation of the pasture.

### Image 2 Plant structure and grazing height for kikuyu and lucerne pastures observed during grazing trials at Gatton.

### Image 3 This image illustrates the large variability in plant structure found in kikuyu. These two tillers are of the same age and have similar number of leaves but they are largely different in total height (14 vs 30 cm) and stem height (6 vs 13 cm). The difference is that the tiller on the right received less water. If a pasture consists of tillers on the left with stem height of 13 cm and if the cows are forced to graze the pasture down to the recommended 5 to 6 cm, total cow productivity will be reduced in a 24 hour period due to lower diet quality and intake.
It is therefore recommended to reduce pasture residues mechanically or using dry or young stock every 2 or 3 grazing rotations.

Given our greater understanding of pasture grazing dynamics, it is now recognised that the height of the bottom stemmy stratum is highly variable over a season. It would be inappropriate to recommend a fixed residual post-grazing pasture height for milking cows if the aim is to consistently achieve optimum diet quality and pasture intake. Even in well managed pastures the height of the bottom stemmy stratum is highly variable within and between paddocks (Figure 1), particularly for hot tropical environments during periods of high pasture growth rate. The height of the bottom stemmy stratum depends on the pasture species and pasture height (Image 2) as well as the irrigation, fertiliser and grazing history of the pasture (Image 3). Therefore, grazing management strategies based on fixed post-grazing heights are unrealistic when there are variations of height in the bottom stemmy stratum of a pasture, as trying to graze at a standard height will compromise cow intake and then productivity.

Horizontal utilisation of the pasture and the new grazing management strategy

The new grazing management strategy called PUP grazing is based on the horizontal utilisation of all leaf material, leaving the stemmy and contaminated plant material behind. This grazing strategy provides a solution for the management of pastures with variable stem heights. This allows you to consistently maximise cow productivity. As indicated previously, dairy cows can achieve high levels of pasture intake and diet quality only when grazing the top leafy stratum (Diagram 1, pg1). Intake, diet quality and milk production decline when cows are forced to graze the bottom stemmy stratum. Therefore, animal performance declines when the top leafy stratum has been grazed across the area of the pasture (horizontal utilisation of the pasture, see Diagram 1) irrespective of the height of the bottom stemmy stratum.

PUP is proven to work

PUP grazing has been found to be a successful grazing management strategy for beef cattle grazing tropical pastures, lambs grazing ryegrass, and more recently the experiment conducted with dairy cows at the Gatton Research Dairy during December 2016 on lucerne pastures. Two long-term grazing trials conducted on tropical pastures and ryegrass found that when 10% of the pasture remained un-grazed resulted in 30% more liveweight gain of steers or lambs when compared to the traditional rotational grazing system where a greater grazing intensity is used. PUP grazing has also been found to increase milk production in dairy systems.

The experiment conducted with dairy cows at the Gatton Research Dairy during December 2016 on lucerne pastures (Image 1, Table 1, pg3), showed that when the proportion of un-grazed pasture (PUP) was about 10% of the pasture area offered, pasture intake was about 9 kg DM/cow/day (T1 and T2 in Table 1). However, when PUP declined to less than 3%, intake decreased to less than 7 kg DM/cow/day which was due to the cows being forced to graze down into the bottom stemmy stratum (T3 and T4 in Table 1). As mentioned above, this resulted in a reduction in milk production per cow.

So how do we assess the proportion of pasture not to offer the cows?

This proportion of un-grazed pasture is normally associated with faecal contamination which was low for the grazing experiments mentioned above (i.e. 3 to 10% of the pasture area). Cattle strongly reject contaminated areas of the pasture. When all the top leafy stratum of the un-contaminated areas has been consumed, cows actually prefer to graze the bottom stemmy stratum of un-contaminated areas rather than grazing leaves around the faecal and urine patches, which results in the reduction in intake, diet quality and animal performance described previously (see Image 4). Therefore, contaminated areas should be taken into account when using PUP grazing. If you count 10 un-grazed patches out of 100 steps, then that is 10% extra area we need to allocate to ensure the cows are fully fed. If we do not allocate extra, we will certainly diminish their intake for the day.

In some cases, the contaminated areas could be as high as 20 to 30% of the paddock depending on stocking rate and the time the cows have previously spent on the pasture. For example, if the contamination is 20% of the pasture area, then the target horizontal utilisation of the pasture should be 80% of the total pasture area. Consequently, the general target of the new grazing management strategy is to achieve 100% horizontal utilisation of the un-contaminated pasture and 0% horizontal utilisation of the contaminated patches. This rule will result in the cows grazing the top leafy stratum, without being forced to graze the bottom stemmy stratum, and achieve the target pasture intake of high forage quality.
Pasture utilisation

If PUP grazing strategy is applied correctly, dairy cows should never graze the poor quality bottom stemmy stratum. The residual leaf material left behind after grazing fuels the plants’ regrowth allowing for a fast regrowth of the pasture. This strategy may result in greater pasture growth and utilisation of a pasture across a season in comparison with the traditional management of a pasture of greater grazing intensity. The traditional management was based on grazing intensely, leaving low pasture residues, resulting in a more intense defoliation. The two long-term grazing trials using beef steers grazing Buffalo grass (Axonopus catherinensis) in Argentina or lambs grazing ryegrass in Brazil, showed that overall pasture utilisation in total kilograms of dry matter per hectare per season was higher for PUP grazing than for the traditional management of more intensive grazing. This is still to be tested for the pastures used by the northern dairy systems in Australia. However, if the bottom stemmy stratum accumulates excessively over time, pasture growth and utilisation may be compromised by virtue of the pasture ultimately losing density over a season. Therefore, pasture residues need to be reduced to five to six cm every couple of grazings to maintain future plant structure and improve overall utilisation on an ongoing basis. Some options for managing residual pasture, without forcing cows to graze harder, is to slash or mulch periodically or use a secondary herd such as dry cows or heifers to control the residue heights.

Slash or mulch periodically or use a secondary herd such as dry cows or heifers to control the residue heights.

Conclusions

By targeting 100% horizontal utilisation of the un-grazed un-contaminated pasture and 0% utilisation of the contaminated pasture for milking cows, the new grazing management strategy called “PUP grazing” achieves the following:

1. Milking cows are never forced to graze the bottom stemmy stratum which is of poor nutritional quality.

2. Milking cows consistently graze the top leafy stratum which is of higher quality allowing you as a manager to achieve target pasture intakes irrespective of the height of the bottom stemmy stratum (Diagram 2).

3. The potential for high pasture growth and utilisation as green leaf remains post-grazing.

4. When excess residues are accumulated they should be reduced mechanically or grazed by dry or young stock but never with milking cows.

For more information please contact:

Dr. Marcelo Benvenutti
Marcelo.Benvenutti@daf.qld.gov.au

Dr. David Barber
david.barber@daf.qld.gov.au

Ross Warren
ross.warren@daf.qld.gov.au

Diagram 2

Targeting 100% horizontal utilisation of the un-contaminated pasture and 0% utilisation of the contaminated pasture consistently allow the milking cows to graze the top leafy stratum without forcing them to consume the bottom stemmy stratum (BSS) regardless of the height of the BSS. Green and blue boxes represent un-contaminated and contaminated top leafy stratum respectively. Yellow boxes represent the BSS.

Diagram 2

More contamination

Less contamination

100%

100%

Short BSS

Tall BSS

Next article

The last article of this series (Part 3) will be published in the next edition of Northern Horizons and will cover the practical application of the new grazing management strategy.

The project is funded and supported by the Department of Agriculture and Fisheries and Dairy Australia. While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this report.
Northern Australian Dairy Conference 2017

“Turning today’s innovations and knowledge into tomorrow’s profit”

Subtropical Dairy (SDP), the Young Dairy Network (YDN) and the Department of Agriculture and Fisheries Queensland (DAFQ) have decided to join forces to hold a two-day conference in Gatton, Queensland on Thursday 16th and Friday 17th November 2017.

The conference will focus on the latest research and innovations, on-farm profit drivers, linking farmers with services and future farming systems. The conference programme will consist of approximately 20 speakers comprising of leading farmers, scientists and service providers.

This event will commence on Thursday, November 16th at the University of Queensland, Gatton Campus with a Service Provider Breakfast outlining the latest Situation and Outlook and QDAS results, followed by a full day conference, concluding with a YDN networking event and dinner. At the conclusion of day one, the Subtropical Dairy AGM will be held. A concurrent meet and greet networking session will run for the Young Dairy Network and Service Providers.

An industry dinner hosted by the Darling Downs Subtropical Dairy Regional Group will be held that night.

The following day, we will be hosting two visits to regional farms on the Southern Downs who have consistently ranked highly in QDAS benchmarking results year-to-year. Following the farm tours, the conference will conclude with an informal BBQ lunch.

There will be no cost to farmers to attend the two-day event however, registration for all other participants (excluding sponsors) will be $300 ex GST. To enable us to provide the Conference free to farmers, we are seeking the support from Service Providers and Industry Partners. If you are interested in supporting the “Northern Australian Dairy Conference 2017” please see available sponsorships below.

For further information please contact Kylie Dennis on 0456 191 965 or email kylie@subtropicaldairy.com.au

GOLD SPONSORSHIP $2000+gst
- Naming rights to sessions i.e.* Sponsor of Session One* etc.
- Name and logo displayed on dinner tables
- Acknowledgement in Conference literature & Northern Horizons pre- & post articles
- 4* Complimentary Full Conference Registrations
- 2* Complimentary Dinner Only Registrations
- Complimentary Trade Display (large table, 3 chairs & area for fridge/merchandise display)
- Preferential Trade Display position
- Conference Satchel Inserts
- Company logo displayed on PowerPoint presentations during the event
- Opportunity for Company signage to be displayed in the conference venue (preferential positioning)

SILVER SPONSORSHIP $1000+gst
- Acknowledgement in Conference literature
- 1* Complimentary Full Conference Registration
- Complimentary Trade Display (small table, one chair)
- Conference Satchel Inserts
- Company logo displayed on PowerPoint presentations during the event

NON-ATTENDING SPONSOR $500+gst
- Acknowledgement in Conference literature
- Conference Satchel Inserts
- Company logo displayed on PowerPoint presentations during the event

Sponsors
Subtropical Dairy would like to thank the below sponsors who have already committed to supporting the “Northern Australian Dairy Conference”

Platinum Gold Silver

Non-Attending

Registration brochures will be emailed out closer to the event. In the meantime, save the dates and we look forward to seeing you in November.
**Mycofix® 5.E**
Proven protection.

Mycotoxins decrease performance and interfere with the health status of your animals. **Mycofix® 5.E is the solution for mycotoxin risk management.**

Please contact BIOMIN on:
- **Northern Australia**
  - Nathan Lister 0499 171 010
- **Southern Australia**
  - Kate Henne 0499 287 710
  - mycofix.biomin.net

---

**AustSafe Super, industry super fund for rural and regional Australia.**
**Proud supporters of the Dairy Industry.**

**Your local Regional Managers**
- **Central QLD**
  - Tony O’Mara
  - 0437 490 445
- **Far North QLD**
  - Anthony Brick
  - 0408 706 064
- **Southern QLD**
  - Bruce Waltisbuhl
  - 0400 995 824
- **Northern NSW**
  - Paul Meredith
  - 0419 601 908

---

**The NEW Benchmark in Calf Milk Replacers**

The MaxCare range of Calf Milk Replacers are available NOW! Choose from ULTIMATE, PREMIUM or ESSENTIAL depending on the particular needs of your calves.

**For more information**
- 1800 MaxCare (629 2273)
- sales@maxumanimal.com.au
- maxumanimal.com.au
- MaxumCMR
Lablab, a very cost-effective source of crude protein.

Craig Findsen, Team Leader, Dairy, Department of Agriculture and Fisheries

Lablab has traditionally been planted dryland with the purpose of growing feed for the autumn feed gap. It is now being rediscovered as both a dryland and irrigated pasture crop grown in much larger areas as a contributor of high quality forage for milkers between December and April.

Lablab can be a cheaper source of crude protein in the diet when grazed as pasture than compared to adding protein in the form of protein meals or by-products.

Forage quality

The forage quality of Lablab pasture is high in crude protein (CP) at 31.5% and moderate in neutral detergent fibre (NDF) at 38% due to cows being able to selectively graze the best of the plant.

Grazing management

Under dryland conditions, Lablab takes 14 weeks to first grazing. Yields are typically 3-5 t DM/ha over 1 to 3 grazings. Under irrigation, Lablab takes 8 weeks to first grazing yielding 8 t DM/ha over 4 to 5 grazings.

The grazing rule is, when leaf cover forms a complete canopy, remove this with a short grazing period. Lablab needs to be grazed by over allocating feed to avoid crop trampling. This method of allocation allows the cows to selectively strip the leaves from the top of the plant. Forty percent of the lablab pasture on offer is composed of leaves and young stems and the remainder are mature stems. The cows normally graze 35% of the pasture height, which is about 58% of the total pasture on offer.

Lablab is a resilient forage source, meaning if you have good growing conditions of another pasture or crop, utilise it as the Lablab will maintain quality (making it one of a few pastures that is versatile from a pasture management perspective). In this instance, reduce the amount of Lablab being fed, but don’t totally remove it from the diet completely.

When other pasture options are less favourable, Lablab can contribute to a greater amount of the diet to maintain or improve milk production.

The economics of Lablab

Lablab can be grown as either a dryland or an irrigated crop. It is an economic way of adding protein to the diet of milking cows.

Dryland Lablab is weather tolerant and represents good value at 8c/kgDM when utilising 4.2 t DM/ha. Dryland Lablab has slightly lower crude protein levels of 24% CP when compared to irrigated Lablab. Irrigating Lablab offers a certainty of a yield with the added bonus of a higher crude protein level at 31% CP. If 5.6 t DM/ha is utilised of an 8 t DM/ha irrigated Lablab crop, this costs 13c/kgDM. If high levels of utilisation are not achieved, then irrigated Lablab could be a more expensive feed than a well-managed and fertilised pasture. Potential risks limiting yield would be over-grazing or grazing in wet conditions leading to destruction of the base of the Lablab plant.

Lablab and Lucerne pastures can reduce the reliance on a protein source such as canola meal in a diet. However, always check your diet is nutritionally balanced, as protein from forage may not be able to meet all of the animal's protein requirements. From an economic perspective Lablab and Lucerne pastures represent extraordinarily good value when compared to purchased protein meals and grains.

The project is funded and supported by the Department of Agriculture and Fisheries and Dairy Australia.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this report ©The State of Queensland, DAF 2017.
Talking Points

Context
The August 2017 ABV release was eagerly awaited by the herd improvement industry, especially bull companies and leading dairy breeders. DataGene encourages the discussion to focus on how animals rate for Australian Breeding Values (ABV’s) and indices, particularly the Balanced Performance Index which accounts for the traits that affect profit, productivity and longevity in the herd.

Historically, the focus has been on the top sires, which has strong commercial interest. The increase in genomic (DNA) testing of females in recent years means there’s also interest in Australia’s top herds and the top cows. This provides the opportunity for DataGene and the herd improvement industry to highlight what can be achieved from focused breeding over many years.

Results from some recent analysis of ABV trends will be included in the August ABV release. The key points are included as follows.

Talking Points
- More herds are competing for the top genomic females list. The Holstein list has an increase of 50% herds contributing top females compared to April 2017. This is as a result of the increasing number of herds genomically testing their animals. Genomic testing by farmers increased 39% in 16/17 compared to the previous financial year.
- There is strong competition from many companies for the top BPI bull positions in Australia. The top 10 Holstein BPI list and the top 10 Holstein Genomic BPI list, each feature bulls contributed from six different companies. This is compared to only two companies just a year ago. Australian farmers benefit by accessing genetics from breeding programs around the world that improve profit in Australian conditions.
- Recent research results confirm that, regardless of the country of origin, or the age of the bull, cows that are sired by high Daughter Fertility ABV bulls are more likely to get in calf. To select bulls to improve fertility, use the Daughter Fertility ABV.

Top line genetic messages
- Use Good Bulls: the easiest way to improve the genetic merit of a dairy herd is to always use bulls that carry the Good Bulls icon. Bulls carrying the icon meet DataGene’s minimum criteria for Balanced Performance Index (BPI)
- There are plenty of Good Bulls to choose from: more than 900 Holsteins, 135 Jerseys, 20 Red Breeds, 12 Guernseys and 40 Brown Swiss.
- Look up Good Bulls using the Good Bulls App or the Good Bulls Guide.

For more information please contact:
Michelle Axford
DataGene Genetic Evaluation Manager
P 0427 573 330
E maxford@datagene.com.au

Glen Barrett
DataGene Genetic Services Manager
P 0418 466 371
E gbarrett@datagene.com.au
Forage sorghum: potential yield and nutritive value

The Queensland Department of Agriculture and Fisheries (DAF) C4Milk team conducted an experiment on forage sorghum at the DAF Gatton Research Facility from September 2016 until January 2017. The experiment investigated the effect of the stage of growth (grazing vs silage), nitrogen application (Low and High), plant density (Low and High) and variety (Mega Sweet vs Graze-N-Sile) on yield and nutritive value of forage sorghum in a fully irrigated crop.

The experiment
The seeding rates used were 9 and 26 kg/ha for the low and high plant density treatments with target plant populations of 100,000 and 450,000 plants per hectare respectively. The experiment started with a full soil profile and the plots were irrigated on a weekly basis using a drip irrigation system. The irrigation began immediately after planting and was applied to replace the water lost due to evapotranspiration. The plots were cut when the plants reached approximately 1 m height for the grazing stage plots and soft dough for the silage stage plots (Image 1).

Liquid Nitrogen (Easy N) was applied throughout the experiment at 456 kg/ha (high) and 44 kg/ha (low). The proportion of nitrogen recovered at harvest was on average 72 and 100 % for the high and low nitrogen application treatments respectively. The two varieties assessed in this experiment were a sweet sorghum x sweet sorghum hybrid (Mega Sweet) and a sorghum x sorghum hybrid (Graze-N-Sile). These two varieties were chosen due to their regular use in the northern Australian dairy industry. Also, there are clear differences between hybrids in terms of plant structure (Image 2). Mega Sweet is a taller crop than Graze-N-Sile which not only influences their total yield but also the proportion of seed head, stem and leaves which determine their nutritive value.

Results
The silage plots were cut once in January. The grazing plots were cut when they reached 1m, which was multiple times. Therefore, the yield values shown in Figure 1 are the result of one cut for the silage stage plots and the accumulated yield of several cuts for the grazing stage plots (3 and 4 cuts for low and high nitrogen treatments, respectively).

Stage of growth
Table 1 below shows average values across the trial. The lower NDF for the silage is due to the high grain content in the silage, which offsets the larger amounts of structural NDF that is present in silage plants.

Nitrogen application
High nitrogen applications had a very positive affect on the yield for grazing or silage, also boosting the crude protein levels of the plant material. It also increased the total grain production, resulting in a higher energy level in the high nitrogen treatment (Table 2, Figure 1). These results suggest that nitrogen is an important aspect of forage sorghum management.

![Figure 1](averageyieldvaluesbothvarietiesandnitrogenapplicationsatsilagestageacrosstrialincludingbothplantpopulations)

<table>
<thead>
<tr>
<th>Grazing</th>
<th>Silage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (t DM/ha)</td>
<td>9</td>
</tr>
<tr>
<td>CP (%) DM</td>
<td>18</td>
</tr>
<tr>
<td>NDF (%) DM</td>
<td>61</td>
</tr>
<tr>
<td>ME (MJ/kg DM)</td>
<td>9.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High N</th>
<th>Low N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (t DM/ha)</td>
<td>18</td>
</tr>
<tr>
<td>CP (%) DM</td>
<td>13</td>
</tr>
<tr>
<td>NDF (%) DM</td>
<td>54</td>
</tr>
<tr>
<td>ME (MJ/kg DM)</td>
<td>9.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graze-N-Sile</th>
<th>Mega Sweet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield (t DM/ha)</td>
<td>20</td>
</tr>
<tr>
<td>CP (%) DM</td>
<td>8.6</td>
</tr>
<tr>
<td>NDF (%) DM</td>
<td>45</td>
</tr>
<tr>
<td>ME (MJ/kg DM)</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Table 1
Average yield and nutritive values across the trial including both varieties and the two levels of nitrogen application and plant population.

Table 2
Average yield and nutritive values across the trial including both varieties and the two growth stages (grazing and silage) and plant populations.

Table 3
Average yield and nutritive values for both varieties at the silage stage across the trial including both plant populations.
Conclusions

This experiment looked at the potential yield and nutritive value of forage sorghum when it is fully irrigated. The conclusions are:

• A fully irrigated crop of forage sorghum can result in high yield of good forage quality;
• When water is not a limiting factor for growth, nitrogen is essential to achieve not only high yields, but also it has a positive impact on forage quality when the crop is used either for grazing or silage;
• There is no difference in yield or forage quality between varieties at the grazing stage. At the silage stage, Mega Sweet had higher yield but lower quality than Graze-N-Sile;
• Plant density has a small or insignificant effect on both yield and forage quality when compared to other factors such as stage of maturity, nitrogen application and variety.

Varieties

There was very little difference between varieties under grazing conditions, however, Mega Sweet yielded more than Graze-N-Sile for silage (29 vs 20 t DM/ha) (Figure 1, pg10). While there was no significant difference in forage quality between varieties at the grazing stage, forage quality at the silage stage was higher for Graze-N-Sile than for Mega Sweet (Table 3, pg10). At the silage stage with high nitrogen application, Graze-N-Sile had higher crude protein content (8.6 vs 7.2 %), slightly lower NDF (45 vs 47 %) and slightly higher energy content than Mega Sweet (9.7 vs 9.4 MJ ME/kg DM). This lower forage quality of Mega Sweet was due to its lower proportion of seed heads.

Plant density

Overall plant density had a small or insignificant effect on both yield and forage quality when compared to other factors such as stage of maturity, nitrogen application and variety.
Summer forages, irrigation and costs.

Ross Warren, Senior Extension Officer, Department of Agriculture and Fisheries Queensland

Spring is here and selecting the most appropriate summer forage option/s is important to ensure the dairy herd’s forage base is secure for the next six months and beyond. Where there is a solid tropical pasture base, ryegrass may still be present and continued prudent management of the sward as the weather warms is imperative to ensure a high volume of leaf is offered to the herd. Well managed tropical pastures are productive, profitable and resilient. A typical kikuyu sward will run at approximately 7c/kg DM, with well over 10t DM/ha commonly being utilised and 4ML/ha of irrigation on the Downs in an “average” year.

For those that have to plant crops there are many considerations. For any herd it is very useful to determine what the dry matter intake requirements are via a simple feed budget. This helps to determine what the forage mix may look like, lablab or maize or sorghum for example. Assessment of farm resources in water, soil, machinery and labour will greatly impact on the summer forage option and the seasonal outlook, although not a guarantee, is worth factoring into risk management strategies for the season ahead. At this point in time, the seasonal outlook appears to be neutral.

The C4 Milk team have demonstrated the performance of a number of summer dominant crops and their application to a range of farming systems. Legumes such as Lucerne, Lablab and soybean have provided high quality feed, crude protein above 20% and ME over 10 MJ/kg DM, under irrigation and dryland conditions. With the exception of Lucerne, the summer legumes are usually lower in yield than cereals, approximately 6t DM/ha of lablab is commonly utilised. Alternatively, sorghum (grain and forage) and maize have yielded extremely well, over 20t DM/ha, and provided starch sources where silage was made. Each of these species has particular soil, nutrient and water requirements and has different applications which are important when making decisions on-farm.

Where irrigation is available some of the risk is taken out of growing certain crops such as maize, however, if the irrigation reserves are limited then some choices around crop selection and area planted become very important. The work from the Dairy and Fodder Water for Profit team over the last 18 years has demonstrated that there is always merit in matching irrigation requirements to particular plant species to achieve the optimal yield potential. It is worthwhile assessing the irrigation water available at the start of the season and only planting enough area to satisfactorily water the crop to its potential. “Rolling” the dice on rainfall is best done in a total dryland situation, outside the designated irrigation area.

The cropping cost of particular species is another critical area of consideration. Ray Murphy and I put together a feed cost booklet which is available on Dairyinfo.biz. This tool is designed to enable producers to enter their own costs and determine their own c/kg DM values for various crops used in their operations. The cost and risk factor may ultimately be the deciding element in growing maize or grain sorghum for instance. If irrigation reserves are low going into summer it may be economically prudent to grow Liberty White sorghum, for example, as opposed to maize. There is less risk with growing sorghum in a marginal situation. Previous articles have highlighted the C4 Milk team feed test results of this crop, the opportunity of repeated cuts also make it worth considering.

The level of irrigation required depends on rainfall and its timing. A maize silage crop on the Downs may demand approximately 3 ML/ha of irrigation in an “average” rainfall year and yield around 20t DM/ha which would bring the feed cost in at 19c/kg DM. If however, only 2ML/ha of irrigation was available and limited water was available at the key time of tassel, it may only yield 13t DM/ha and bring the cost up to 27c/kg DM. Given only 2 ML/ha of irrigation, Liberty sorghum silage would yield approximately 13t DM/ha at a feed cost of 12c/kg DM, clearly making this a more economically viable decision.

Having a well defined summer forage plan helps ensure dry matter targets are achieved and reduces the risk of having to buy in spot market feeds. If irrigation is available, matching the supply to the plant demand will result in optimising potential yields and quality. If resources are limited, look after a smaller area well to achieve a better result. Summer forages play an important role in the sub-tropical feed base and when managed well, present profitable feed options.
InCalf Reproduction Symposium 2017

PROGRAM DETAILS
• Pregnancy loss in grazing cattle in Australia and New Zealand
• Effects of disease and production interactions on reproductive health of modern dairy cows
• Risk factors for pregnancy loss after first early pregnancy test
• Cross breeding in Australia
• Reproductive technologies and management in different dairy systems
• Impact of reproduction on business performance
• Combining capital, labour, management and time to make milk solids and profit
• How good does dairy reproduction need to be in 2017?

To register go to www.regonline.com.au/DASymposium2017

Dairy Australia invite you to attend the InCalf Reproduction Symposium 2017. This event is designed for all people interested in herd reproduction performance on Australian dairy farms, including veterinarians, artificial breeding advisors, factory field officers, herd improvement representatives and other dairy industry professionals.

Keynote International Speakers
José Santos University of Florida, USA
Debbie Berg AgResearch, NZ

Australian Speakers
John Mulvany OMJ Consulting
Richard Shephard Herd Health
Jo Coombe University of Melbourne
Bill Malcolm Agriculture Victoria

Beaudesert – Subtropical’s LEGENDAIRY CAPITAL 2017

Scenic Rim dairy farmers and the wider community celebrated Beaudesert’s claim as Subtropical Dairy’s LEGENDAIRY Capital for 2017, with a party and Grand Parade of ‘Community cows’.

The BBQ dinner event was held at Beaudesert on Saturday 26th August and marked the culmination of the regional LEGENDAIRY project, which involved bringing the community together encouraging them to take ownership of a gifted corflute cow which they could decorate to celebrate ‘dairy’ in the region.

Around 150 guests attended the celebration and these guests included farmers, business people, school representatives and local councillors.

The community project and event proved to be a very positive campaign for the whole Beaudesert and surrounds community and the cows will now be displayed throughout the township of Beaudesert.

Judging for the National LEGENDAIRY Capital for 2017 is currently underway.

To register go to www.regonline.com.au/DASymposium2017
The primary focus of the YDN is to enhance the future viability of the dairy industry by supporting its young people. Over the past ten years, the YDN has more than achieved this for the Northern Dairy Industry and is an organisation that today has a very robust structure to support this primary focus. Many graduates of the network are now holding leadership positions not only within their family businesses but also on various industry boards in a representative capacity. Relationships and networks created throughout their time as a YDN member will be invaluable to the future progress and success of the industry.

The six regions that make up the YDN are as follows:
- Mid North Coast NSW
- Far North Coast NSW
- South East QLD
- Darling Downs
- Sunshine Coast
- Far North QLD

There are currently 480 members across these regions with Operational Steering Committees (OSC) in each of the regions representing local membership. An overall Strategic Steering Committee (SSC) meets four times per year to chart the strategic direction of the network. This committee is made up of representatives of young farmer members and industry stakeholders.

Since 2009, the network has attracted and secured $1.07 million in external funding through various government and industry projects. In addition, support both in-kind and through sponsorship from many commercial organisations, has all been directly invested in developing young people within the Northern Dairy Industry. More than 4000 people have attended over 150 events over the last eight years with the following listing the type of activities that engaged young people:
- Leadership and personal development activities such as Leadup and DairySage;
- Farm walks exploring topics ranging from grazing management through to lameness and calf rearing;
- Study Tours to Northern Rivers, South Australia, Tasmania, New Zealand, Western Australia and Sunshine Coast;
- Resilience/Triple Bottom Line workshops – exploring topics ranging from how to farm in a changing climate through to how to manage and employ people and succession planning;
- Forums;
- Nutribiz – activities around building an understanding about dairy cow nutrition;
- Networking events – most regions held a Christmas function at the end of each year.

During 2015 to 2017, the YDN ran 80 events with 64% of the attendance from the YDN demographic of 18 to 40.

As the network turns ten, it is a good opportunity to reflect on the many achievements and challenges the network has faced during this time. Investing in the industry’s young people is essential to the future with many outcomes from the network not realised for many years.

### Young Dairy Network, 10 years of Achievements for the Northern Dairy Industry

**Viv McCollum**, Program Manager Young Dairy Network

The Young Dairy Network (YDN) started to develop in Australia’s Northern Dairy Industry in 2006 with the Darling Downs group being first to become established. In 2008, a formal network was setup as a joint project between Queensland Dairyfarmers’ Organisation (QDO) and Subtropical Dairy Programme (SDP). The network is currently managed by SDP on behalf of both organisations under a Memorandum of Understanding (MOU) and is supported by the NSW Farmers Association, milk processing companies and the Queensland Department of Agriculture and Fisheries (DAF).

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Events</th>
<th>Total attending</th>
<th>Gender of Attendees</th>
<th>Ages of Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2015</td>
<td>25</td>
<td>335</td>
<td>141</td>
<td>194</td>
</tr>
<tr>
<td>2016</td>
<td>33</td>
<td>429</td>
<td>191</td>
<td>238</td>
</tr>
<tr>
<td>2017</td>
<td>22</td>
<td>294</td>
<td>132</td>
<td>159</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>1055</td>
<td>464</td>
<td>591</td>
</tr>
<tr>
<td>% of total</td>
<td></td>
<td></td>
<td>43.98%</td>
<td>56.02%</td>
</tr>
</tbody>
</table>
Across Australia, Dairy Australia has established a network of Focus Farms to support farmer decision making. The tracking of real decisions on real farms under real conditions over a two-year period provides visibility and insight into the impact these decisions make on the bottom line. In addition, Focus Farms provide the opportunity for farmers to learn through the “experience and story” of others. Over the next two years, Subtropical Dairy’s Focus Farm will be Paul and Jo Judge’s dairy business at Gowrie Junction on the Darling Downs.

Viv McCollum
Project Manager, Subtropical Dairy Focus Farm

It is often discussed throughout the northern Australian dairy community about what opportunities and options young people have to purchase their own dairy business and the steps needed to achieve this goal. Over the next two years, Subtropical Dairy will focus on this journey with Paul and Jo Judge by following how their business and careers progress towards the goal of dairy business ownership.

Paul started in the dairy industry over twenty years ago as a farm apprentice for seven years in the Southern Highlands before moving back to the Northern Rivers NSW. He worked his way up to farm manager and three years ago, he and Jo took the leap to starting up on their own by leasing a farm at Gowrie Junction on the northern outskirts of Toowoomba.

They have just completed the first term of the original three-year lease and have recently taken up an option for another five years. Paul and Jo currently have a 170 cow herd, producing 650 to 700,000 litres per year. The system is pasture based with 75% home grown feed. The farm is 80 ha with 60 ha of irrigation. They have 350 ML water allocation for the farm and a combination of side rollers, centre pivot and hand shift pipes as their irrigation infrastructure.

Today, their business is profitable and debt free, however there are aspects that need addressing. They acknowledge that their work/life balance has been affected over the last three years with no extra labour being employed other than the occasional relief milker. Herd reproduction and breeding strategies are also being reviewed. Given this, Paul and Jo are looking at ways they can increase their milk production to enable cash flow to employ labour. Their vision is to have a dairy business in the future they can be proud of and generate enough wealth to eventually own their own farm.

An advisory group is currently being setup to act as a ‘sounding board’ for Paul and Jo’s business decisions over the next two years. Aspects of the business’s management such as pasture agronomy and grazing, irrigation infrastructure, herd nutrition, reproduction and employing staff will be examined in detail to work out what changes the business needs to make today to meet the longer-term business goals and career pathway for the Judge family. With the assistance of the advisory group and project team over the next two years, Paul and Jo will be able to analyse, implement and evaluate a few different options for their business in a quest to meet their longer-term goals.

Over the next two years, we will be publishing regular updates of Paul and Jo’s progress in Northern Horizons.
Evaluating fertigation under Queensland conditions

Ruth Chalk
Program Manager,
Dairying Better ‘n Better NRM Programme

The Dairying Better ‘n Better program’s on-farm demonstration to trial the use of a fertigation system under a low pressure irrigation system is progressing well. The demonstration is located at McInnes Brothers farm at Harrisville, in south east Queensland. The trial is utilising an annual ryegrass paddock under a centre pivot irrigator. A field day is being planned to showcase the outcomes from the trial and provide the wider dairy farming community with the facts and figures of installing and operating a fertigation system.

Nitrogen is the only nutrient being applied through the fertigation system. It is being applied to one quarter of the pivot. In comparison, another quarter is being fertilised using a broadcast fertiliser. Soil samples (down to 60 cm) were taken from the trial area prior to winter planting to ensure no other nutrients were limiting.

An EcoDoseTM Fertigation System injector pump is being used. Pat Daley, Irrigation Agronomist from Daley’s Water Service Pty Ltd, is providing the advice and support for the purchase, installation and use of the fertigation system.

Soil moisture monitoring equipment (EnviroPro SDI 12 unit with a tipping bucket) is measuring irrigation and rainfall. Pasture dry matter yield is being measured before and after grazing. Early results after three grazings indicate that the fertigation quarter is slightly ahead on pasture growth.

Benefits of the fertigation system so far have included labour and fuel savings, which then lead on to cost savings on repairs and maintenance of machinery. The liquid fertiliser is immediately available to the plants and can be distributed more evenly (provided the irrigation system has an even distribution uniformity) compared with granular fertilisers. Applying smaller amounts more often enables a more optimum growth rate. In addition, liquid fertilisers aren’t as volatile, reducing potential losses to the atmosphere.

A series of fact sheets are being developed to provide more information using fertigation with annual ryegrass pastures. This information will be available at the field day.

The project is funded through the Australian Government’s National Landcare Programme, and is delivered by the Dairying Better ‘n Better program, a joint initiative of Queensland Dairyfarmers’ Organisation, Subtropical Dairy and the Dairy and Fodder Water for Profit program.

Soil testing to optimise pasture production and minimise fertiliser costs – an update on the Far North Queensland Regional Group project.

This article provides an update on the project “Improved management of phosphorus (P) on Atherton Tableland dairy farms” which is being overseen by the Subtropical Dairy Far North Queensland Regional Group.

The targeted outcome from this project is to promote the use of soil tests to optimise pasture production and reduce input costs. The project has focused on an assessment of the current state of available P in dairy pasture soils, current P fertiliser use and recommendations for improved P management. Soil pH and exchangeable cations were also assessed but were a secondary focus. Most of the work for this project has been completed and a final report is being prepared.

A total of 323 soil test results from the Atherton Tablelands in the Dairying Better n Better database from 2009 to 2017 were assessed. The average Colwell P concentration was 114 mg/kg (range of 7-1,250 mg/kg), which is very high. There were only 44 samples with Colwell P concentrations of less than 30 mg/kg. The critical concentration for Colwell P is 30 mg/kg. Below that a pasture growth response to applied P is expected. Test results across years were only available for a few farms and trends in available P could not be determined.

Six farmers who have a history of using soil analyses were interviewed regarding how soil analyses results influenced current fertiliser management. Again, the average Colwell P concentration was high (108 mg/kg) with a range of 19-760 mg/kg. The soil test results were similar to those from the Dairying Better n Better database.

Conclusions

The project has revealed several aspects of P management and soil testing that can be improved:

- Colwell P concentrations are generally high so fertiliser P applications can be reduced, thus reducing input costs;
- There is large variability in soil P results. This requires further investigation to understand why this is the case;
- Need to ensure that the standard soil sampling depth of 0-10 cm is used (ranges 0-15, 0-20 and 0-25 cm were found);
- Ensure that the standard and most widely used P test in Australia, Colwell P, is used;
- Promote the use of soil testing to guide P fertiliser management;
- Promote a better understanding of soil test results so that both farmers and agribusiness are able to confidently interpret results and question standard fertiliser recommendations.

A workshop to present the project results is being planned for November or January.
‘Project 20:20 Pathways to Change’ is a collaborative project between Subtropical Dairy, Dairy NSW, Dairy Australia and the NSW DPI, showcasing five NSW farms. All featured farms have adopted on-farm technologies to different levels; improving their herd health, management and data collection.

A farm walk in August at Project 20:20 participants Tony and Jillian Wilson’s farm, explored their decision path and positive outcomes of converting to a robotic system.

Most farmers would agree that they’re time poor, and on average, a dairy farmer may spend 50-60% of their time on milk harvesting*.

In September 2012, the Wilsons took a risk and converted their herringbone to a robotic dairy, but only after investigating a Queensland robotic dairy and doing a series of budgets on converting to an automatic milking system (AMS).

In the first two years, they required increased labour while building and learning the new system. But now that the AMS is milking the cows, they have more time to grow better pastures and to better utilise their pastures.

The Wilsons analyse the data collected by their AMS to make informed herd and farm management decisions. The data reveals cows on heat, low producing cows, sick animals, can detect mastitis, and also predicts pregnancies and dry off times.

Dr. Nicolas Lyons, Development Officer Dairy – Technology & Robotic Milking Systems, DPI NSW spoke at the farm walk on technology adoption.

Dr Lyons outlined the three main aims of technology:

1. Replacing human labour (automation)
2. Capturing data (information)
3. Allowing for better decisions (cost – time – risk)

He cited data from a 2015 internet survey of dairy farmers suggesting there is significant potential for increased uptake of technology in Australian dairies.

When considering new technology start by outlining the issue you’re trying to solve and understand your starting point. Follow this with research and investigate available options – is it just ‘trendy tech’? – or can it be integrated to really help with the issue at hand. Take the time to analyse each option.

It’s also important to have clear and reasonable expectations. Talk to your team, everyone from staff to consultants and advisers, as any new technology needs to be successfully integrated into your business.

Finally, consider budget, and if the calculations are favourable, take the time to plan and prepare for adopting the new technology.

*Source: Yani Garcia, University of Sydney
Mastitis and On-Farm Milk Cultures – A Field Study

This article discusses the results of a research project undertaken by Dr. Tim Olchowy, Senior Lecturer in Livestock Medicine, School of Veterinary Science University of Queensland, Gatton. The project was funded by Subtropical Dairy and was endorsed by the Subtropical Dairy South-east Queensland Regional Group.

Introduction
Knowing what type of bacteria (gram positive (+) or gram negative (-)) is causing clinical mastitis has several advantages:

- Anti-microbials work on gram-positive bacterial infections;
- Anti-microbial drugs are wasted on treating infections (unless the infection becomes toxic) caused by gram-negative bacteria. This can be as high as 50% of treatments;
- It reduces the volume of milk that must be discarded due to antibiotic treatment;
- It reduces the risk of antibiotic contamination in the vat;
- Fewer cows require injections, reducing the likelihood of needle injuries.

Traditionally, laboratory testing has been used to identify whether mastitis is caused by gram + or – bacteria. Turn-around time for culture results is usually several days. This project evaluated an on-farm testing programme which takes 24 hours to complete.

Methods
The study was conducted on a year-round calving dairy farm in south east Queensland milking approximately 250 predominantly Friesian cows. Milk samples were collected during the period of November 2016 to May 2017.

A short training program was run on the study farm with the participating producer and herdsman prior to the start of the study. The training covered the proper collection and handling of milk samples, use of culture plates, use of the milk sample applicator, and interpretation of culture results.

Milk samples were collected from quarters of cows with signs of clinical mastitis. For this study, clinical mastitis was defined as either abnormal appearance of milk or abnormal appearance of both milk and quarter. Milk samples were cultured on-farm using culture bi-plates containing selective bacterial growth media and in a microbiology laboratory methods. Charmaine Lubke for the microbiology laboratory methods. Rochelle Price and Tina Maguire for bacterial cultures of milk samples using the standard microbiological laboratory methods.

All culture bi-plates were examined and reported after 24 hours of incubation. Samples processed by the microbiology laboratory using standard microbiological methods were examined and reported after 24 hours (preliminary results) and again after 48 to 72 hours (final results) incubation.

The culture results from the bi-plates were interpreted as growing gram-positive bacteria (such as Streptococcus, Staphylococcus, Enterococcus), gram negative bacteria (such as E. coli), or having no bacterial growth.

Results
A total of 135 milk samples were used to compare the results of the microbiology laboratory and the on-farm culture bi-plate system. Results are shown in Figure 1. Of the 135 laboratory cultured samples, 43 gram-positive infections were detected. In comparison, on-farm testing detected 32 gram-positive infections, four results with both gram-positive and gram-negative, five with no growth and two gram-negative. Based on this result, if the management decision was made to treat cows based on farm testing results of either gram positive identification, identification of both gram positive and negative, or no growth, this would have treated 95% of gram-positive mastitis infections. It should be noted of the other 92 non gram-positive laboratory results, the farm testing protocol identified two false gram-positive results.

Cost saving
Overall, if the total cost of testing and treatment is considered, there is a cost saving of $10 per mastitis infection on-farm. This does not include savings in additional milk sold because of no withholding, or risks associated with injections or vat contamination. For a farm with 200 mastitis cases per year, the saving is a minimum of $2,000 per year.

Constraints
- Accessing plates for testing is a problem at the moment.
- There is also some training required in plating techniques and interpretation.
- Not suitable for eradication program (i.e. Streptococcus agalactiae).
- No automatic routine quality control (QC) program, unlike commercial lab.

To read the full reports from this work, please visit dairyinfo.biz.

Acknowledgements: A sincere thank-you to the staff of the Microbiology Laboratory of the School of Veterinary Science, University of Queensland-Gatton, Gatton. Rochelle Price and Tina Maguire for bacterial cultures of milk samples using the standard microbiological laboratory methods. Charmaine Lubke for the preparation of the culture bi-plates used in the study.
Herd Fertility — All year calving
Practice Audit

This introductory checklist is designed to assess performance and practices in key herd fertility management areas.

For more information visit www.dairyinfo.biz/dairybiz.com

<table>
<thead>
<tr>
<th>+++++</th>
<th>TARGET</th>
<th>OBSERVED / MEASURED</th>
<th>BEST PRACTICE</th>
<th>CHANGE?</th>
<th>WHEN CAN I CHANGE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calf and heifer management</td>
<td>Heifer liveweight at first calving: &gt; 90% of mature cow liveweight</td>
<td>Heifer liveweights are measured and compared with set targets</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Cow body condition and nutrition</td>
<td>Herd avg. BCS at calving: 4.5-5.5 &lt;15% cows below 4.5 and &lt;15% above 5.5. &lt; 0.6 herd avg. BCS loss, calving to mating</td>
<td>You are using appropriate feeding or other strategies after calving and through early lactation to avoid excessive loss of body condition</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Heat detection</td>
<td>Y-R calving herds: 80-day submission rate: 73% Seasonal/split calving herds: 3-week submission rate: 86%</td>
<td>All farm team members involved are well trained in detecting heats You use paddock observations in conjunction with heat detection aids such as tail paint and heat mount detectors</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Sire selection and AI</td>
<td>Sires selected are ranked in the top 50 bulls in Good Bulls Guide Conception rate: 51%</td>
<td>Semen storage and handling procedures and insemination technique used by all operators on your farm are maximising conception rates</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Bull management (if bulls used)</td>
<td>Y-R calving herds: 100-day in-calf rate: 58%</td>
<td>You are selecting healthy, fertile, well-grown bulls to run with the herd Enough bulls are available when cows are likely to be on heat</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Cow health problems around calving</td>
<td>Milk fever: &lt;1% % culls (inc. deaths) in first 60 days of lactation: &lt;6%</td>
<td>You are keeping accurate records of the number of cows affected by each type of health problem and comparing them with target levels You have an effective transition cow management program in place You have effective strategies to prevent and treat cow health problems</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
<tr>
<td>Y-R calving herds: Selecting VWP</td>
<td>Voluntary Waiting Period (VWP): Between 30 and 60 days</td>
<td>You have selected an appropriate Voluntary Waiting Period for your herd based on heat detection or conception rates, lactation persistence and other factors</td>
<td>Yes</td>
<td>Need to Review</td>
<td>No. Not right for my business</td>
</tr>
</tbody>
</table>
Transition cow management

Transition cow management has been one of the most significant advances in dairy nutrition and production worldwide in the last 20 years. It provides farmers with a major opportunity to improve cow health, milk production and reproductive performance.

Many Australian dairy farmers have implemented successful transition feeding programs pre-calving and reported dramatic reductions in milk fever and other cow health problems around calving, and improvements in milk production and fertility.

But many other farmers haven’t yet got on board. So Dairy Australia’s Grains2Milk and InCalf programs have joined forces to support the adoption of effective transition cow management programs across the Australian dairy industry.

The result is the publication pictured at right - an extensive review of transition cow management for nutritionists, vets and farm advisers.

There have been major advances in understanding the needs of the transition cow and the use of transition feeding programs pre-calving in just the past few years. Given this, we felt that the first thing needed was an extensive technical review on transition cow management. The result is this publication, which is the most extensive review of transition cow management ever undertaken, drawing on more than 300 peer-reviewed scientific papers. It provides an up-to-date technical resource for nutritional professionals, veterinarians and farm advisers on the many aspects of transition cow management, and serves as the technical foundation for additional adviser and farmer information resources being developed by Grains2Milk and InCalf.


Many Australian dairy farmers have implemented successful transition feeding programs pre-calving and reported dramatic reductions in milk fever and other cow health problems around calving, and improvements in milk production and fertility.


This calculator is intended to assist dairy farmers and advisers to design low milk fever risk pre-calving transition diets.
Researching options to value-add to farm gate milk is a key strategic priority for Subtropical Dairy. In late 2016, Subtropical Dairy Program, Sunshine Coast Council, the University of the Sunshine Coast and Department of Agriculture and Fisheries Queensland funded a pilot project to develop a Strategic Plan for the Sunshine Coast dairy region. In time, it is the intent of Subtropical Dairy to expand this to a northern Australian project. As the first step in achieving this goal, the purpose of this project was to understand the current state of the dairy value chain in the Sunshine Coast region.

A copy of the report from this project can be found at www.dairyinfo.biz

Following a value chain analysis approach, the objectives of this project were to:

- identify significant factors in the chain’s internal and external environment (marketing, economic, social, institutional) (global, national, state, regional);
- explore what Sunshine Coast consumers value re the dairy industry;
- map the existing chain in terms of physical movement of goods, relationships and communication;
- identify potential opportunities both domestically and internationally;
- identify gaps in the value chain or other structural impediments that may limit these opportunities.

What were some key recommendations from this project?

- Local program to raise visibility of local brands.
- Develop a market for local milk, private label milk and other coffee/dairy products such as ice-cream or cold coffee.
- Move up or down the channel to strengthen the overall chain and position it more strongly in the market.
- Consider other revenue options that the farmers can implement to lower the risk of producing milk exclusively.
- Develop a range of products targeting the growing interest in health and wellbeing:
  - Fermented drinks: kefir, drinking yoghurt, skyr
  - High protein – Fit market
  - Whey products
  - Protein bars
- Gourmet food and cooking is also on trend in the market, so specialty cheeses such as European style cheeses offer opportunities for new products:
  - European style of cheeses
  - Chimay (soaked in ale), Anari (premium feta).

A copy of the report from this project can be found at www.dairyinfo.biz
Dairy farmers are reminded that chemicals used on farms, including those used to clean and sanitise your plant and milk vats, must be registered with the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Dairy Australia’s Regulatory Affairs Manager, Kira Goodall, said that recent isolated incidences of unregistered products being marketed to farmers or farmers inadvertently using chemicals for the wrong purpose, were concerning for the whole industry.

“All agricultural and veterinary chemicals must be registered with the APVMA and should be used as instructed on the label. Check the label and make sure you are using the right chemical for the right job,” Ms Goodall warned.

Chemical use and chemical residues have also been an increasing focus for international customers in recent years.

“Given our market sensitivity, safety and reputation the industry does have concerns about this issue and dairy farmers should be wary when buying chemicals for their farms,” Ms Goodall said.

“By using unregistered chemicals or not using registered chemicals according to label directions, farmers risk wasting time and money on products that don’t work and are potentially harmful for cows, farm staff and people who drink the milk.” Using unregistered products is also against the law, not to mention farm Food Safety Plans and Quality Assurance Schemes. Appropriate chemical use can and will be checked as part of farm audits.

Fonterra Australia Quality Manager - Milk Supply, Lisa Archer, said dairy customers trust that their food is safe. Appropriate, on-label use of registered chemicals will ensure consumer trust is maintained.

“Any incident that affects this trust could also reduce the value of milk products for the entire industry,” she said.

Parmalat National Raw Milk Quality and Compliance Manager, Sarah Carter, said the chemical registration process benefits everyone.

“Consumers can trust that the dairy products they purchase are safe to eat and drink, and farmers can be confident that the chemicals they’re using are going to do the job effectively to keep the milk they produce at the highest quality possible.”

How do I know?

Legally registered agricultural and veterinary chemicals have an APVMA approval number printed on the label. The label will also include clear instructions for when and how to use the chemical.

If you want to check if a chemical is registered you can always go to the APVMA website or app at: https://portal.apvma.gov.au/pubcris

For more information go to https://www.dairyaustralia.com.au/farm/animal-management/milking/milk-quality

What if you could improve fertility while also maximising milk production?

The ALLTECH® MINERAL MANAGEMENT program:

- Uses Bioplex® and Sel-Plex® trace minerals which are better absorbed, stored and utilised by the animal
- Is tailored for Australian dairy herds
- Uses TRT (Total Replacement Technology) strategy

For more information on our new range, call your local Alltech representative or call 1800 736 991.

Email: alltechaustralia@alltech.com | Phone: 1800 736 991
alltech.com/australia | AlltechAP | alltechaustralia
# 2017 Event Calendar

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
<th>LOCATION</th>
<th>VENUE</th>
<th>CONTACT PERSON</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBC</td>
<td>Rearing Healthy Calves Farm Walk</td>
<td>Mid North Coast NSW</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>5</td>
<td>YDN Rearing Healthy Calves Farm Walk</td>
<td>Sunshine Coast</td>
<td>TBC</td>
<td>Kylie Dennis 0456 191 965 <a href="mailto:kylie@subtropicaldairy.com.au">kylie@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>10</td>
<td>YDN Heifer Rearing Discussion and Farm Walk – ‘Heifers On Target’</td>
<td>Darling Downs</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>17</td>
<td>Rearing Healthy Calves Farm Walk</td>
<td>South Burnett</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>18</td>
<td>SEQ YDN Summer Land Camel Farm Visit</td>
<td>Harrisville</td>
<td>8 Charles Chauvel Dr, Harrisville</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>23</td>
<td>YDN Heifer Rearing Discussion and Farm Walk – ‘Heifers On Target’</td>
<td>Mid North Coast NSW</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>24</td>
<td>YDN Heifer Rearing Discussion and Farm Walk – ‘Heifers On Target’</td>
<td>Far North Coast NSW</td>
<td>Brooklyn Dairy, The Risk NSW</td>
<td>Katina Trout 0427 916 650 <a href="mailto:katina@subtropicaldairy.com.au">katina@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>25</td>
<td>Regional Dinner</td>
<td>6–8 Catherine St, Malanda</td>
<td>Malanda RSL</td>
<td>Jo Srhoj 0458 065 695 <a href="mailto:jo@subtropicaldairy.com.au">jo@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>26</td>
<td>Basic Nutrition Course</td>
<td>Malanda</td>
<td>TBC</td>
<td>Jo Srhoj 0458 065 695 <a href="mailto:jo@subtropicaldairy.com.au">jo@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>26</td>
<td>Low Stress Calving/Transition Management</td>
<td>Darling Downs</td>
<td>Kulpi</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>27</td>
<td>Heifer Rearing Discussion and Farm Walk – ‘Heifers On Target’</td>
<td>Webinar</td>
<td></td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>31</td>
<td>Low Stress Calving Farm Walk</td>
<td>South East Qld</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Heifer Rearing Discussion and Farm Walk – ‘Heifers On Target’</td>
<td>Sunshine Coast</td>
<td>TBC</td>
<td>Kylie Dennis 0456 191 965 <a href="mailto:kylie@subtropicaldairy.com.au">kylie@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>14</td>
<td>QQAS report back meeting</td>
<td>Gympie</td>
<td>TBC</td>
<td>Ray Murphy 0417 622 273 <a href="mailto:ray.murphy@daf.qld.gov.au">ray.murphy@daf.qld.gov.au</a></td>
</tr>
<tr>
<td>15</td>
<td>QQAS report back meeting</td>
<td>Woodford</td>
<td>TBC</td>
<td>Ray Murphy 0417 622 273 <a href="mailto:ray.murphy@daf.qld.gov.au">ray.murphy@daf.qld.gov.au</a></td>
</tr>
<tr>
<td>16-17</td>
<td>Subtropical Dairy Conference &amp; AGM</td>
<td>Gatton</td>
<td>University of Qld – Gatton Campus</td>
<td>Kylie Dennis 0456 191 965 <a href="mailto:kylie@subtropicaldairy.com.au">kylie@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>21</td>
<td>QQAS report back meeting</td>
<td>Beaudesert</td>
<td>TBC</td>
<td>Ray Murphy 0417 622 273 <a href="mailto:ray.murphy@daf.qld.gov.au">ray.murphy@daf.qld.gov.au</a></td>
</tr>
<tr>
<td>22</td>
<td>QQAS report back meeting</td>
<td>Oakey</td>
<td>TBC</td>
<td>Ray Murphy 0417 622 273 <a href="mailto:ray.murphy@daf.qld.gov.au">ray.murphy@daf.qld.gov.au</a></td>
</tr>
<tr>
<td>28</td>
<td>QQAS report back meeting</td>
<td>Malanda</td>
<td>TBC</td>
<td>Ray Murphy 0417 622 273 <a href="mailto:ray.murphy@daf.qld.gov.au">ray.murphy@daf.qld.gov.au</a></td>
</tr>
<tr>
<td>Coming Soon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>Farm Safety Workshops</td>
<td>TBC</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>Nov &amp; Dec</td>
<td>Healthy Hooves On-Farm Workshops</td>
<td>TBC</td>
<td>TBC</td>
<td>Belinda Haddow 0423 00 3638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
</tbody>
</table>

**Reef Alliance Awards 2017 are now open**

Since 2008, agricultural industry groups, regional natural resource management bodies, rural land managers and the Australian Government have been working together to implement enhanced land management practices that improve the quality of water entering the Great Barrier Reef Lagoon. The 2017 Reef Alliance Awards will recognise and celebrate the achievements and efforts of outstanding individuals who have participated in the Australian Government Reef Programme and/or Reef Trust Initiative. The Reef Alliance Award recognises individuals or farming enterprise’s exemplary efforts in improving farming practices to improve water quality through the reduction of nutrients, sediment and pesticide. The Reef Alliance is seeking nominations from farmers and extension officers working to reduce their off-farm impact on the iconic Great Barrier Reef, with entries open until 2 October 2017. For more details on the awards please visit www.qff.org.au or contact Dairying Better ‘n Better Program Manager Ruth Chalk on 0400669994.

The awards are sponsored by the ‘Reef Trust: Reef Alliance – Growing a Great Barrier Reef’ project, which is funded by the Australian Government Reef Trust.
At Jefo, we understand the importance of optimizing the transition period for your herd.

We have the solutions achieve improved reproduction performance with easier calving and increased number of embryos.

Contact the Jefo Team today:
- Andy Robinson: 0438 631 337 • arobinson@jefo.com
- Nelani Roux: 0427 992 335 • nroux@jefo.com
- Wayne Bradshaw: 0429 301 500 • wbradshaw@jefo.com

SAVE THE DATE
November 16th and 17th
Subtropical Dairy Conference & AGM
Gatton

Contact Kylie Dennis for more details
P 0456 19 19 65 E kylie@subtropicaldairy.com.au