Winter forage options to increase yield and quality
C4Milk demonstration trial

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The C4Milk project is focused on increasing the profitability, productivity and sustainability of sub-tropical dairy farming systems. A key component of the C4 project is reducing feed costs for all classes of stock and optimising feed quality and quantity. The winter forage combination demonstration trial conducted at the Gatton Research Dairy Unit in 2019 evaluated a range of traditional winter cereal forages, winter protein forages and combinations of cereals and protein forages. The trial plots were grown under both irrigated and dryland conditions, with the plots managed to simulate a single or multiple cut harvest or grazing system. Table 1 summarises the species grown within the demonstration.

The following article highlights the major findings from the demonstration and has categorised them into two sections: Part A – Cereal Crops & Part B – High Protein Crops. The results shown include yield, estimated as tonnes dry matter (DM) per hectare (t DM/ha), and quality parameters including crude protein (CP; % DM), metabolisable energy (ME; MJ/kg DM) and neutral detergent fibre (NDF; % DM). Quality values for samples harvested multiple times throughout the season represent the weighted average as a proportion of the yield from each harvest.

Total water applied (irrigation and rainfall) was 363mm (3.63 ML/ha) and 110mm (1.1 ML/ha) for the irrigated and dryland blocks, respectively.

<table>
<thead>
<tr>
<th>Winter starch forages</th>
<th>Winter protein forages</th>
<th>Winter combinations</th>
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<tbody>
<tr>
<td>Barley</td>
<td>Canola</td>
<td>Barley &amp; Field peas</td>
</tr>
<tr>
<td>Cereal Rye</td>
<td>Faba Beans</td>
<td>Barley &amp; Vetch</td>
</tr>
<tr>
<td>Forage Wheat</td>
<td>Field Peas</td>
<td>Oats &amp; Brassica</td>
</tr>
<tr>
<td>Oats</td>
<td>Lupins (2 varieties)</td>
<td>Oats &amp; Vetch</td>
</tr>
<tr>
<td>Triticale</td>
<td>Vetch (2 varieties)</td>
<td>Triticale &amp; Vetch</td>
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<td></td>
<td></td>
<td>Wheat &amp; Vetch</td>
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</table>

Table 1 The range of cereal and protein-based forages assessed within the winter forage demonstration.
Welcome to Northern Horizons.

It has been excellent to see the season turn around with some good rainfall across Subtropical Dairy. Unfortunately, in some areas, we have seen too much with some flooding impacting our farms. It has been very encouraging to see good falls across the grain growing areas of Queensland and NSW. Hopefully this translates into reduced grain and protein meal prices during 2020.

Despite this welcomed change in weather, for many of our farms, they are still relying on bought feed until they can get new season forage off paddocks and into their silage pits. Many of our irrigation dams are still low, meaning that further follow-up rain will be needed in these catchments to see our industry through this winter and spring.

Given this scenario, Subtropical Dairy will be extending its drought support services, such as Taking Stock, until our farms get properly back on their feet. If you or someone you know requires a Taking Stock, please contact your local Extension Co-ordinator.

As you would be aware, the last 15 months has seen much time and effort towards developing a new national strategic plan for the dairy industry called the Australian Dairy Plan (ADP). One of the key commitments from the consultation process during 2019 was Transformational change to reform industry structures and strengthen advocacy to be more effective, united and efficient. To address this commitment, the Joint Transition Team (JTT) recently recommended the creation of a single, new whole of industry national dairy organisation. The proposed national body (referred to as ‘NewCo B’ in the JTT’s report) would see the current range of national and regional dairy organisations brought together as a one stop shop for all industry services including policy, advocacy, R&D and marketing for dairy businesses across the entire supply chain. It would operate through one national brand and a network of regional offices providing tailored local services. Over the next few months, Subtropical Dairy will be in contact regarding how you can provide feedback on the proposed restructure and what changes are required to ensure its success.

In the interim however, it is business as usual for Subtropical Dairy. Leading up to June 30, 2020 we will be delivering, in conjunction with industry partners, a range of workshops and events throughout Queensland and northern NSW. These include: Managing mastitis during wet conditions; Rearing Healthy Calves; Basic Nutrition; Heifers on Target; Energy Saving workshops; discussion groups; Young Dairy Network; Feeding Pastures for Profit and our Regional Groups. Not all of these events are offered in all of our regions. We can however change our plans if a regional need (or request) arises.

Once again, welcome to Northern Horizons and I hope you find this edition of value and interest to your business.

Paul Roderick
Chair, Subtropical Dairy Programme Ltd.

Young Dairy Network (YDN) grow, network, support and inspire

It’s great to see such a good start to the year with much needed rain along the eastern part of the country. Many regions have seen more rain so far this year than all of the 2019 horror. With the grass growing and the sun shining I hope that this year will be a turning point for the Subtropical Dairy industry.

The Young Dairy Network will hit the ground running by hosting a number of field days focusing on Genomics and Genomic Testing across different regions. With genomic technologies becoming a major sector of the dairy industry and the cost of rearing heifers becoming more and more expensive, now might be the time for your business to learn about genetic management. Come along to hear Semex National Key Accounts and Solutions Manager, Jo Holloway, explain about recent developments in genomic testing. The events will provide the chance for everyone to discuss testing options and how to use data to make cost effective herd decisions, particularly in tough times. Even though this is a YDN event, this is open for everyone to come along and learn something new.

Recently approximately 1,500 farmers, service providers, processors, retailers, investors and other key stakeholders came together to voice their opinion on what is needed to shape the future of the Australian Dairy Industry. From this, the Australian Dairy Plan was drafted at the end of last year with the final version expected to be released in March 2020. A Joint Transition Team (JTT) was formed as part of the Australian Dairy Plan. The JTT have recently released their report which recommends the creation of a single, new whole of industry national dairy organisation. Until 2 March 2020 you can provide feedback on the report. I strongly recommend that all farmers, especially young dairy farmers, read this report at www.dairyplan.com.au. The Australian Dairy Plan will be shaping the future of the dairy industry. Feedback on options for reform of industry structures contained in the JTT report can be provided via email at contact@dairyplan.com.au.

For any questions related to the YDN, please don’t hesitate in giving myself or your regional coordinator a call.

Jason McInnes
Chair Young Dairy Network
0400 974 712

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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.
Part A: Cereal Crops to increase yield.

Winter cereals such as oats and barley are commonly grown as winter fodder sources, either for grazing or conserved fodder. For this demonstration some less commonly grown species were evaluated against the more traditional options. These included cereal rye, triticale and wheat. All of these species were grown under both dryland and irrigated conditions and harvested as both a single and multiple cut system. The dryland multiple cut option was harvested twice and the irrigated multiple cut option was harvested three times.

Dryland Cereals

- Wheat harvested as a single or multiple cut system had the highest crude protein (CP) levels (>30% CP), combined with metabolisable energy (ME) concentrations above 10 MJ and dry matter yield that exceeded 6 t DM/ha (Table 2).
- Cereal rye had the highest yield of all species, however, the lower feed quality results for CP and ME (Photo 1 – refer page 1).
- Triticale had above average CP and ME concentrations, however yield was lower than other species in the single cut system.
- The traditional options of oats and barley both performed better when harvested as a single cut system under dryland conditions.
- Oats was consistently lower in NDF compared to the other cereals.

Irrigated Cereals

- Harvesting all species several times had a positive effect on CP and ME concentration (Table 3).
- Triticale had the highest yield under a single cut situation and had good CP and ME levels under both harvesting systems (Photo 2).
- Shepherd barley was included in the irrigated comparison. It is normally taken as a one-off silage crop, but performed best in terms of yield in a multiple harvest system. However, it had the lowest feed quality across multiple cuts. Its feed quality when harvested as a single cut was comparable to other species.
- Wheat achieved a relatively high yield in the single cut system, with above average CP and ME concentrations (Photo 2).
- Cereal rye displayed good yield potential but was inferior to the other options for feed quality.
- Oats and barley were ranked close to the average on yield and quality, however displayed low NDF under both harvest scenarios.

<table>
<thead>
<tr>
<th>Forage species (Variety)</th>
<th>Yield (t DM/ha)</th>
<th>CP (% DM)</th>
<th>ME (MJ/kg DM)</th>
<th>NDF (% DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single Harvest</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cereal rye (Southern Green)</td>
<td>7.5</td>
<td>16.9</td>
<td>10.8</td>
<td>44.5</td>
</tr>
<tr>
<td>Oats (Austin)</td>
<td>7.3</td>
<td>19.4</td>
<td>11.0</td>
<td>37.6</td>
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<tr>
<td>Wheat (Bennett)</td>
<td>6.4</td>
<td>30.3</td>
<td>10.8</td>
<td>39.7</td>
</tr>
<tr>
<td>Barley (Dictator)</td>
<td>6.2</td>
<td>21.1</td>
<td>9.7</td>
<td>41.5</td>
</tr>
<tr>
<td>Triticale (Endeavour)</td>
<td>5.2</td>
<td>26.4</td>
<td>11.7</td>
<td>38.1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>6.5</td>
<td>22.8</td>
<td>10.8</td>
<td>40.3</td>
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<tr>
<td><strong>Multiple Harvest</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cereal Rye (Southern Green)</td>
<td>8.3</td>
<td>26.4</td>
<td>10.8</td>
<td>41.2</td>
</tr>
<tr>
<td>Triticale (Endeavour)</td>
<td>7.5</td>
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<td>11.2</td>
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<td>Wheat (Bennett)</td>
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<td>6.9</td>
<td>29.7</td>
<td>11.0</td>
<td>39.4</td>
</tr>
</tbody>
</table>

Table 2: Yield, Crude Protein (CP), Metabolisable Energy (ME) and Neutral Detergent Fibre (NDF) of single and multiple harvest dryland cereals. Ranked from highest to lowest yielding.

Key Findings

The trial demonstrated that the use of some alternate winter cereal forages offered the potential to improve yield and quality outcomes in both dryland and irrigated systems over traditional winter cropping options. The use of the alternative crops will depend on individual farm situations as to whether the major driving factor behind species selection is yield, feed quality or a combination of both.

Wheat offered significantly higher feed quality results in both growing systems, allowing potential feed cost savings from less reliance on expensive concentrates used within rations. The wheat variety used in this demonstration also displayed later maturity, offering the potential to maintain feed quality when harvest conditions are delayed. This could also lend itself for use in combination plantings allowing the chance to better match maturity patterns of the crops grown in combination.

Triticale also displayed good yield potential whilst maintaining reasonable feed quality in an irrigated system, whilst cereal rye achieved relatively good yields under dryland conditions. Alternative cereal forage options offer the potential to increase yield, and in some cases, quality parameters as well. Improving yield will decrease feed related cost of the forage and diet, resulting in an improved margin over feed costs and enhanced home grown feed reserves.
Part B: High Protein Crops to improve forage quality.

Four winter legume forages and canola were selected as potential high protein silage crops, with canola also grown as a grazing and hay option under an irrigated forage production system. Canola was also grown at different rates to assess the impact of planting rate on yield and quality. The species and varieties (in brackets) of each crop are outlined in Table 4.

All legume crops were harvested once at the pod stage of maturity. Multiple cut canola crops were harvested three times, at similar times to cereal crops within the demonstration and left to regrow. The single cut canola crop was harvested at a similar time to the cereal crops just prior to flowering.

<table>
<thead>
<tr>
<th>Forage</th>
<th>Yield (t DM/ha)</th>
<th>CP (%DM)</th>
<th>ME (MJ/kg DM)</th>
<th>NDF (% DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single Harvest</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Faba Bean (Nasma)</td>
<td>18.4</td>
<td>18.5</td>
<td>10.2</td>
<td>35.3</td>
</tr>
<tr>
<td>Faba Bean (Warda)</td>
<td>18.1</td>
<td>18.5</td>
<td>9.6</td>
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<tr>
<td>Lupins (Bateman)</td>
<td>16.0</td>
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<tr>
<td>Canola (Hyola - 10 kg/ha)</td>
<td>11.6</td>
<td>30.3</td>
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<tr>
<td>Canola (Hyola - 5 kg/ha)</td>
<td>10.8</td>
<td>30.9</td>
<td>11.5</td>
<td>22.0</td>
</tr>
<tr>
<td>Lupins (Luxor)</td>
<td>7.7</td>
<td>17.6</td>
<td>10.5</td>
<td>32.5</td>
</tr>
<tr>
<td>Field Pea (Morgan)</td>
<td>7.1</td>
<td>20.9</td>
<td>10.9</td>
<td>36.3</td>
</tr>
<tr>
<td>Vetch (Namoi)</td>
<td>6.1</td>
<td>26.3</td>
<td>10.6</td>
<td>35.9</td>
</tr>
<tr>
<td>Vetch (Popany)</td>
<td>5.5</td>
<td>28.9</td>
<td>11.0</td>
<td>33.0</td>
</tr>
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<td><strong>Average</strong></td>
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<td><strong>11.8</strong></td>
<td><strong>19.8</strong></td>
</tr>
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Table 4 Yield, Crude Protein (CP), Metabolisable energy (ME) and Neutral Detergent Fibre (NDF) of single and multiple harvest irrigated high protein forages. Ranked from highest to lowest yield.

- Both varieties of faba bean were the highest yielding legumes averaging 18.2 t DM/ha.
- Bateman lupins were the only other high yielding legume variety with 16.0 t DM/ha.
- Both vetch varieties were high in CP however along with Luxor lupins and field pea were low yielding, all below 8 t DM/ha.
- The single cut canola crops yielded in the mid-range with 11 t DM/ha, with high CP concentrations above 30%.
- Multiple cut canola yielded an average of 18.4 t DM/ha and were relatively high in CP and ME concentration.
- Planting rate had little effect on yield or quality for all canola crops.
- Canola was low in NDF averaging 21.0 % across all crops, whereas the legume species ranged from 33.0 to 43.1 %.

Key Findings

Overall the canola and faba bean crops were the standout high protein options.

The faba beans yield was exceptional in comparison to the other legume species and indeed other forages grown in the demonstration. Low yields of legume crops have traditionally held back their usage, however the faba beans offered high DM yield and feed quality potential (Photo 3). In addition, there are agronomic benefits from a crop rotation viewpoint. Legumes are well known for return of nitrogen to the soil and enhancement to soil structure, whilst offering the option to break disease cycles over monoculture cropping systems. Some further work needs to be done on how well faba beans will ensile and the palatability of the ensiled product.

The multiple cut Hyola canola (Photo 4) yielded extremely well with high CP and ME. Interestingly, the canola crops were consistently lower in NDF, averaging 21.0 % versus 36.2 % on average across the legume crops. There was no advantage in the higher planting rate of canola for single or multiple cuts.

Identifying and developing high protein forage systems that are high yielding will provide a high quality low cost forage that will potentially offset the use and cost of high cost protein meals and by-products, therefore lowering diet costs and increasing the margin over feed cost of the total diet.

The results from the combination options and economic analysis of all options will be evaluated in the next edition of Northern Horizons. For further information please contact Mark Bauer at mark.bauer@daf.qld.gov.au.
A new national organisation for the Australian dairy industry

Report by the Joint Transition Team to the Australian Dairy Plan Committee – January 2020

In its report published on 29 January 2020, the Joint Transition Team (JTT) of the Australian Dairy Plan has recommended the creation of a single, new whole of industry national dairy organisation.

The proposed national body (referred to as ‘NewCo B’ in the JTT’s report) would see the current range of national and regional dairy organisations brought together as a one stop shop for all industry services including policy, advocacy, R&D and marketing for dairy businesses across the entire supply chain. It would operate through one national brand and a network of regional offices providing tailored local services.

The proposed new organisation would be member owned and overseen by a skills-based Board. Farmers would contribute a single levy payment for all services (the current Dairy Service Levy) and processing companies would also provide funding. Eligible expenditure on research and development would continue to attract matched funding from the Commonwealth Government.

Key recommendations from the JTT were:

1. The Australian dairy industry transform its national industry organisations by establishing one fully integrated member-owned company (NewCo B) that will give dairy businesses more influence to directly shape the industry’s future;
   a. One organisation that is flexible, agile and able to perform at world class level for dairy businesses;
   b. JTT wholly agrees with the conclusion of dairy industry businesses as the current arrangements are no longer fit for purpose.

2. NewCo B provides all industry services (policy and advocacy, R&D, marketing) in an integrated manner to maximise the efficiency and effectiveness of its operations. Services will be provided across the entire dairy value chain at national and regional levels.

3. Farmers pay one levy for NewCo B membership, being the current statutory Dairy Service Levy. In addition, the processing industry should pay membership to NewCo B, ideally through a statutory levy mechanism and at a rate established through consultations by processors;
   a. The company will use levy funds for ‘strategic policy development’ which includes policy advocacy as per the long established precedent between the Australian government and Australian Pork Ltd;
   b. The company will not be involved in party-political activities.

4. The national strength of NewCo B will be based on its deep and direct connections with the dairy business community at a regional level. NewCo B will have a regional presence with the flexibility to tailor services to each region. It will value the distinct differences between regions and its services will help to optimise regional comparative strengths that allow regional businesses to compete successfully in the marketplace.

5. NewCo B has a skills-based board of nine directors who are selected through a director nomination committee and approved by members at an Annual General Meeting. Directors will have three-year terms with a maximum of three terms.

6. An independent Chair be appointed from start-up to provide investors (government and industry) with confidence in the stability and governance of the company. After the first three years of operation, the appointment of the chair will revert to the normal practice of directors electing their Chair.

7. The Australian Dairy Committee form a Joint Implementation Committee to prepare a detailed change plan, with full implementation proposed by 1 July 2021.

Where to from here? How do I have a say in the new structure?

Details regarding a local consultation process are still being developed at the time this article is being written. Subtropical Dairy will communicate to you the details of this process as they become available.

In the interim, please refer to the Australian DairyPlan website www.dairyplan.com.au for more information and updates.

Recommended NewCo B

Fully integrated model

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<th>Board</th>
<th>CEO</th>
<th>Project Management Office</th>
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<tr>
<th>Business units (eg R&amp;D, Policy &amp; Trade, Marketing &amp; Promotion)</th>
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<tr>
<td>Regional Dairy Office</td>
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<th>Whole-of-chain national forum</th>
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A new national organisation for the Australian dairy industry January 2020

A new national organisation for the Australian dairy industry

Recommended NewCo B

Fully integrated model
Despite recent rain, Far North Queensland (FNQ) farmers gathered at the Malanda Hotel on January 22, 2020 to discuss drought feeding strategies with Jim Wade – Consulting Nutritionist – Wade Agricultural Consultants. Jim had prepared a comprehensive approach for the group to guide the discussion and covered a range of topics including: correct management decisions during times of drought and/or low milk prices, feed availability and quality, the flow-on effects of under feeding the milking herd, and various diet scenarios and their impact on profitability.

Jim presented a summary of a study conducted by Mike Hutjens in 2009. A large number of dairy consultants were asked to survey their clients to determine the best and worse decisions they made when margins were tight. The following table summarises the results from this study.

The study emphasised the importance of feeding the most productive animals well, maintaining milk quality to achieve the highest milk price per litre, and culling animals that are costing money to feed and/or have recurring health issues.

Jim presented five different diet options to the group and showed the impact of each option on profitability (Operating expenses taken from FNQ Queensland Dairy Accounting Scheme reports). Those who attended the session were provided with a copy of each of the diets.

Participants names from left to right as follows: Gavan Doull, Wayne Dobe, Kellie Dobe, Jim Wade, Mark Kindlean (Top Stock Agencies), Howard Smith, Krystal Walmsley
During 2018 and 2019, NSW DPI in conjunction with the Harris Park Group, collated information from the dairy industry about how a range of technologies are used for individual cow management. In total, 141 farmers and 35 service providers contributed to the project called TechKiss. The results from this project are now available on the NSW DPI website (please see the address below). These resources provide information on a range of technologies such as auto-drafting, electronic cow id, computerised bale feeders and activity meters. The website provides farmers with a central point where they can find information on the technologies through short videos and information sheets. The full range of technologies researched throughout the project is also provided in a ‘Techmatrix’ that provides more detailed information such as manufacturers, features and compatible software. The videos also provide useful tips and traps about how to make the technologies work on farm and get the best return on your investment.
The TechKISS Project Report
Cow Management Technologies on NSW dairy farms in 2018

TechKISS is a NSW Dairy Industry Fund project helping dairy farmers ‘get what they want’ from individual cow management technologies.

More effective use of auto-drafting, computerised bail feeding, in-line milk meters and activity meters has the potential to significantly increase herd productivity.

The project has worked with farmers and service providers in New South Wales to create new resources (short videos and Topic Sheets) that share key elements for successful technology use on farm.

The project approach

What technology is in Australia?
How many farms have the tech?
How is it playing out on farm?

The project has worked with farmers and service providers in New South Wales to create new resources (short videos and Topic Sheets) that share key elements for successful technology use on farm.

What technology is in Australia?
The first step was to compile a list of the cow management technologies that are commercially available in Australia: the TechMatrix.

The TechMatrix is an independent resource that summarises the key features of about 80 products from 20 manufacturers.

The contents of the TechMatrix will change as new products are released or the functionality of existing products expands.

The spreadsheet and a video on how to use the TechMatrix are available on the NSW Department of Primary Industries website. It is a good starting point for discussions about tech on farm.

How many farms have the technologies?
60% of farms use one or more of the technologies

How is it playing out on farm?

The survey of NSW dairy farms found that:
- 40% of farms don’t have these technologies (all but one of these had less than 300 cows).
- Of the 60% of farms with tech: 22% had a single technology, 31% used two or three, and 7% had all of four.

In 2018, 38% of farms had auto-drafting, 35% had computerised bail feeding systems, 26% had in-line milk metering and 26% had activity meters.

While the majority of farms with auto-drafting or in-line milk metering had installed them more than five years ago, 61% of the farms with activity meters had put them on in the last two years.

NLIS Electronic Identification worked the auto-drafting system on 76% of farms, the bail feeding on 71% of farms, and the in-line milk meters on 52% of farms.

Herd Management Software developed in Australia is used on half the farms in NSW (Easy Dairy on 38%, Jantec on 12%). The next most commonly used package is Alpro/Delpro (on 10% of farms): 21% of farms do not use computerised records for herd management (all had less than 300 cows).

Satisfaction with the cow management technologies is high and most farmers said they had made ‘a significant difference to the farm business’.
How well is it playing out on farm?
39 farm interviews

Many of the ‘tips and traps’ of technology in the TechKISS resources came from the interviews with 39 farmers and 35 service providers. More than half of the 29 farms with multiple technologies were using a mix and match of brands.

29 farms with multiple technologies

While a major driver for investing is to reduce costs associated with labour, the benefits of using tech were more centred around ‘making things easier’, ‘reducing stress’ and ‘being able to leave the farm’.

Extent of tech integration on farm

The interviews confirmed that integration of cow management technologies is not a given when using a ‘mix and match’ of brands.

When integration is a priority, the options are to:

- Buy technologies that work together,
- Negotiate a case-by-case solution with the tech supplier (also best done at purchase), or
- Use the technologies independently (which may require entering data such as calving dates into 2 separate systems).

Farmers largely rely on other farmers and dealerships for advice about purchasing and using equipment (there are no independent services for this).

How data generated by tech is used

Farmers primarily use the cow management technologies to (fully or partly) automate tasks.

While a major driver for investing is to reduce costs associated with labour, the benefits of using tech were more centred around ‘making things easier’, ‘reducing stress’ and ‘being able to leave the farm’.

Few farms were using data from the technologies for herd-level decision-making, although this is likely to be where a lot of farm productivity improvements could potentially be made.
TechKISS Topic: Activity Meters

Activity meters have complex algorithms (formulas) that assess posture and activity patterns to predict a variety of events, such as whether a cow is on heat, sick or calving.

The smart parts of activity meter systems are the:

- Activity meters on individual cows that transmit radio signals (every 15-120 mins).
- A receiver (long range antenna or WiFi) that picks up and converts this to a digital signal, and sends it to a
- System controller that processes the cached data and makes it available to the
- Activity meter software which converts the data into alerts and reports, and often includes a smartphone app so people can access anywhere.
- Integration with Herd Management Software avoids double entry of data and makes automation easier.

Benefits

- Reduces labour input needed for heat detection
- Improves reproductive performance of herd
- Detects sick cows early (better health outcomes)
- Reduces stress – and a way to get off farm

“We’re finding cows we wouldn’t have picked as on heat. The person who used to just watch cows come in and go out of the dairy is now helping with cupping up.” AD

The smart parts

- Cell tower
- Long range antenna
- Smartphone
- System Controllers (e.g., ID Control + Processing Unit, or Coordinator)
- PC &/or Cloud
- Activity Meter Software
- Herd Management Software

Nov-2019

“We’re finding cows we wouldn’t have picked as on heat. The person who used to just watch cows come in and go out of the dairy is now helping with cupping up.” AD

Benefits

- Reduces labour input needed for heat detection
- Improves reproductive performance of herd
- Detects sick cows early (better health outcomes)
- Reduces stress – and a way to get off farm
Tips & traps from TechKISS study farmers

Choosing activity meters

☐ Talk to others before buying:
  - Farmers using the product
  - Your farm consultants about the data outputs they need
  - Tech suppliers for up-to-date details

☐ Base your final choice on:
  - How it integrates with other tech used on the farm (now or in future)
  - The available support ("don't just buy to a price, buy to a service")

Other considerations:

☐ Decide type of activity meter (collar, ear tag, leg band, rumen bolus)
  - Typical maintenance and replacement frequency
  - Fit with farm infrastructure (such as head bales)

☐ Get the desired functionality such as:
  - Rumination included in algorithms
  - Cloud-based, accessible remotely
  - Use of smartphone app to enter cow-side observations

☐ Know the costs of this technology:
  - Estimate the likely pay-back time
  - Plan for depreciation and replacement

Integration with other tech

☐ Get activity meters that work with the farm’s Herd Management Software (this is a high priority with other cow management technologies such as auto-draft gates and in-line meters)

WH&S

☐ Have appropriate facilities for safely fitting and removing devices

☐ Put farm protocols in place to minimise injury when handling cows

Signal coverage across farm

☐ Put in antennas (and possibly repeaters) to get desired coverage

☐ Check that you’re not picking up radio signals from neighbouring cows

☐ Check firmware updates automatically via the antenna

Activity meters on cows

☐ Assign meters to the right cow

☐ Put meter on cow in appropriate position, with the correct tightness

☐ Have on cows for at least 7 days to generate reliable baseline data

☐ Regularly check cows are wearing their devices and they are working

☐ Store loose transponders in a steel cabinet so they are not read

Acting on alerts

☐ Set up so information is displayed where it’s needed (at point of milking, via smartphone app etc)

☐ Train farm staff so they understand outputs and know how to act on each of the different alerts

Fixing issues

☐ If used for heat detection, be able to fix or replace meter within 24 hours

☐ Be able to have software issues fixed immediately (eg by remote access)

TechKISS is a New South Wales Dairy Industry Fund project delivered by the Harris Park Group between 2018 and 2019. Project information is generic and is offered on an independent ‘as is’ basis with no guarantees of completeness or accuracy. Please seek advice before acting.

Visit NSW Department of Primary Industries for videos on cow management technologies such as auto-draft gates and in-line meters. Our thanks to the 20 technology suppliers, 141 NSW dairy farmers and 35 advisers who contributed to this project.
Rural Investment Corporation (RIC) Drought Loans

Belinda Haddow
Subtropical Dairy Extension Co-ordinator South-east Qld and Darling Downs

The Rural Investment Corporation (RIC) offer loans for agricultural businesses to assist them to prepare for, manage through, and recover from drought. These loans can be used to refinance your debt, pay for operating expenses or capital or access new debt for operating expenses and capital.

Moving forward through the current drought and into the recovery stages, these loans may assist businesses through offering refinance of existing debt up to 50% at 2.11% interest rates and interest free and interest only periods in the terms.

Full terms and conditions are available in the loan guidelines. Comprehensive information on the loans, eligibility and application requirements can be found on the RIC webpage www.ric.gov.au/farmers/drought

If the process of applying for these loans is a concern, there are a number of organisations that can assist with advice and applications. Please contact your local SDP Regional Extension Co-ordinator who can put you in contact with a local person.

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.

Quick facts

<table>
<thead>
<tr>
<th>Amount</th>
<th>Up to $2 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>10 years, 2 years interest free, 3 years interest only and 5 years principal and interest.</td>
</tr>
<tr>
<td>Early settlement</td>
<td>No fee</td>
</tr>
<tr>
<td>Interest rate</td>
<td>2.11%</td>
</tr>
<tr>
<td>Apply</td>
<td>Anytime</td>
</tr>
<tr>
<td>Application fee</td>
<td>No fee</td>
</tr>
<tr>
<td>Extra repayments</td>
<td>No fee</td>
</tr>
<tr>
<td>Redraws</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Additional terms

Percentage of total debt — at least 50% of your total debt must stay with a commercial lender.

Frequency of repayments — tailored to the cash flow of the farm business.

Repayment structure — first 2 years interest free, then 3 years interest only, then principal and interest for remainder of the 10 year term. After 10 years, you can refinance any remaining balance with a commercial lender.
On Friday 31st January 2020, the Sunshine Coast held its very first ‘Women in Dairy’ Discussion Group (SCWID). The group was well attended by 11 farmers from the region.

It was great to see the ladies catch up with fellow dairy farmers during the tough time the industry is currently going through. It was also nice to see some new faces meeting for the first time. There was lots of chatting and ideas shared, not only about families and life in general, but about business matters, staff and industry issues. Some of the topics discussed on the day included: Farm Safety; Mental Health; Office Setup; Computer Skills; ESKi; People Management; Personality Typing; Working with Families. Going forward, the SCWID will look at some of these topics in more detail. I have no doubt that the ladies also enjoyed the morning catching up and having some well-deserved time off the farm.

The Women in Dairy Discussion Groups across Subtropical Dairy are designed to provide a supportive, relaxing environment to share and learn new information, discuss current issues affecting families and industry, and to have some time out. Each group has decisional rights regarding the topics they would like to cover and when and where they meet. Subtropical Dairy, utilising funding from Dairy Australia, financially supports these meetings and provides speakers or other resources as required.

The SCWID group decided on meeting every four weeks, alternating between a Wednesday and Thursday to allow for those that have work or have other family commitments on a particular day to participate. The SCWID will meet at different locations throughout the Sunshine Coast to make it easier for everyone travelling.

The next meeting will be at 10am on Thursday 5th March at SpillDEBeans in Pomona. If you would like to join us, please contact Kylie on 0456 19 19 65 or email kylie@subtropicaldairy.com.au.

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\(^1\)Meta-analysis based on research results published in peer-reviewed publications: Poppy et al., 2012.

\(^2\)DMI Claim: U.S. Food and Drug Administration, Reviewed and Accepted, 2013.

*Helps support the dry matter intake of dairy cows when fed as part of a total mixed ration during the first 70 days of lactation.*
Drought and low growth seasons tend to see a range of less common feed ingredients being used. These include older hay, alternative co-product feeds, and a high volume of failed cereal and canola crops. The risk of mycotoxins forming in feed is increased with extreme weather conditions, such as drought conditions, high temperatures and high humidity. It is important to understand the potential risks and problems of using feeds contaminated with mycotoxins.

Alternative crop hays (e.g. canola) are often kept on the ground for longer after being cut than pasture and cereal hay sources, increasing the chances of microbial action within the hay. The thicker stem means it is harder to dry out, and it may be conserved with a higher moisture level than pasture or cereal hay. Failed cereal crops cut for hay may also have higher moisture left in the nodes. Microbial load plus moisture carries a higher risk of becoming mouldy in storage.

Oxygen is the enemy in silage production. Silage made from mature crops will be hard to compact to exclude air, so there is greater risk of spoilage in that circumstance. Poorly stored hay, silage and/or other high moisture feeds are at risk of spoilage by microbes (e.g. yeasts, bacteria and moulds). Silage made from mature crops has a high risk of spoilage and mycotoxin production as it is hard to keep oxygen out.

Mycotoxins produced by moulds in silage and hay can decrease the digestibility of feed, and affect animal productivity and health. Animal health issues include:

- minor illness
- reduced milk production
- reproductive failure
- abortion
- death

The risk of mycotoxins forming in feed is increased with extreme weather conditions, such as drought conditions, high temperatures and high humidity. It is important to understand the potential risks and problems of using feeds contaminated with mycotoxins.

Key Messages

- Mycotoxins are produced by moulds and fungus in feeds
- Ingestion of mycotoxins may impact animal performance and health
- Forage testing can be used to detect level of risk in feeds
- Use management tools to reduce the risk of mycotoxins on animal performance

Signs to look for in feeds

Visible moulds and musty smells are key signs of mould risk in feed. If mould is present, avoid purchasing if possible. Be aware though, that fungal impacts can be present without obvious mould being visible.

The idea that white moulds are not dangerous, and that only coloured moulds and fungi are dangerous, is false. There are several classes of fungi that typically produce white coloured mould that can produce dangerous mycotoxins.

This includes the most common fungi of forages in the southern temperate zone (Fusarium spp.).

Testing forage

If you are concerned about the level of mould in your feed, testing your forage for mould and fungi is a sensible first option for assessing risk. The following screening methods are available from most reputable forage testing labs. See the Dairy Australia website for names and contact details for some of the forage testing labs in Australia.dairyaustralia.com.au/feedlabtesting.

- Mould and fungi count is a sensible first option to assess your risk. It is relatively affordable at between $20 and $30.
- Mould and fungi identification can help address risk or establish the cause of animal health issues, but they can be quite expensive.
- Mycotoxin assays typically only test for specific mycotoxin classes, and may not test for all mycotoxins which can cause damage to animal health or production.

When considering mould counts, be aware that increased fungal loads are clear signs of feed entering a composting phase. Greater fungal load means more composting process. This alone will impact voluntary intake and feed nutrient values to stock, as well as increase the health risks.

Table 1 (refer page 13) is combined information from Penn State, North Carolina state and Wisconsin universities in the United States and is a guide to the level of risk, however interpretation of mould count tests should always be done in conjunction with your nutrition advisor.
Mycotoxin management tools

Every effort should be made to reduce or remove feed that is at risk of fungal impact. Fungal impact can occur when livestock ingest harmful levels of mycotoxins found in mouldy silage, hay and/or endophyte infected pastures. If feed is at risk of fungal impact and it is not possible to remove from the diet, mycotoxins management tools could be used to alleviate the symptoms.

Mycotoxin management tools can be fed to dairy cows, often within the grain ration, to reduce the impact of mycotoxins in the diet as a result of feeding fungal impacted feed stuffs. These tools are often referred to as toxin binders, but not all toxins are open to simple 'binding'. The latest in mycotoxin management tools involve a binding action with a biological deactivation action that together reduce the impact of more toxins than binding alone.

Some mycotoxin management tools have inclusions that allow animals to withstand or bounce back more rapidly from toxin challenge. These may include liver function, as the liver is often the first impacted organ in case of toxin challenge.

Mycotoxin management tools need to be fed in a timely manner to take effect when the mould-affected product is fed. Daily feeding is the best option for your herd.

There are many mycotoxin management tools on the market at varying price points and efficiencies. Speak to your stockfeed manufacturer or nutritionist to ensure you get the right product and dose for your animals.

Mycotoxin poisoning in cows

Fungal load and mycotoxin contamination of dairy feeds can increase the incidence of disease and reduce production efficiency in cattle. Some impacts are overt, while others can be harder to spot such as reproduction impacts. Here are some things to look out for:

- Low feed intake, which can occur with simple fungal impact, or with mycotoxin load
- Reduced milk production, either due to reduced feed intake or direct mycotoxin load
- Rough hair on the coat
- Slightly arched back
- Swollen hocks and laminitis
- Digestive upsets such as diarrhoea and/or rumen stasis
- Mucous in manure
- High somatic cell count
- Excess salivation
- High rate of abortion or foetal resorption
- Broader infertility issues.

In the case of production or reproduction issues arising, more common alternate causes should be considered and ruled out before attributing issues to mycotoxins. These may include reduced dry matter intake due to basic feed availability or feed quality. It may also include seasonal impacts such as heat.

If impacts are not obvious, and there are feeds on offer to the herd that may create risk, investigation of these feeds is warranted. Consider the quantity of feedstuffs you are feeding your herd, and if needed, reduce the amount or offset risks in other ways such as the use of feed management tools.

Dairy Australia acknowledges contributions from Ian Sawyer and Hugh Archibald – Feedworks to this fact sheet.

<table>
<thead>
<tr>
<th>Mould count*</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–100,000</td>
<td>Relatively safe</td>
</tr>
<tr>
<td>100,000–1,000,000</td>
<td>Caution advised, manage risk using a mycotoxin management tool</td>
</tr>
<tr>
<td>1,000,000–2,000,000</td>
<td>Caution advised; watch stock carefully and use a mycotoxin management tool</td>
</tr>
<tr>
<td>2,000,000–5,000,000</td>
<td>Expect performance issues; use a mycotoxin management tool</td>
</tr>
<tr>
<td>Over 5,000,000</td>
<td>Feeding not recommended</td>
</tr>
</tbody>
</table>

*Mould count calculated as colonies forming units per gram (CFU/g)
Source: Feedworks: Adapted from Forage Lab Australia

Table 1 Indication of danger levels for mould growth
Focus on Drought Feeding sessions across Queensland and northern NSW

Dairy farmers and service providers across the Subtropical Dairy region were invited to attend ‘Focus on Drought Feeding’ workshop sessions throughout January and February. Extended drought conditions, high commodity prices and varying feed availability led to the development of the half day, informal sessions.

Dr David Barber (Dairy Team Leader and Principle Scientist) and Ross Warren (Senior Extension Officer) from the Department of Agriculture and Fisheries Queensland facilitated the sessions throughout southern Queensland and northern New South Wales and Jim Wade facilitated the Far North Queensland session.

The workshops were deliberately designed to be informal and focus on the needs of those attending. With 15-20 farmers and service providers attending the sessions in Oakey and Nanango there was good discussion and sharing of ideas and strategies drawing on the expertise of industry service providers and dairy farmer peers in the rooms. Key areas of discussion focused on strategies for drought feeding and management and planning for the autumn winter season ahead.

Some of the concepts and feed options discussed during the Darling Downs and Burnett sessions included:

- Strategies for feed purchasing
  - What to buy, when to buy, comparing different feed options on their merit of price, nutritive value or transport/storage considerations, availability of

---

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payment terms available and whether or not to contract purchase.

- The current feed options available including soy hulls, palm kernel extract (PKE), dry distillers grain (DDG), corn gluten meal and other byproducts.

- The use of feed additives to assist with drought feeding. The merits of using mycotoxin binders, rumen buffers and modifiers were discussed in a range of feeding systems.

- Common issues to avoid when feeding the herd a drought ration – botulism, blue-green algae in water sources, prussic acid in stressed sorghum crops, nitrate poisoning in drought-affected forages.

- Managing the herd to maximise margin over feed costs (MOFC) – if practical, splitting the herd to feed appropriate rations to different herds, selling/culling excess stock on farm enabling the productive animals to be better fed, and altering milking frequency.

Subtropical Dairy recommends that advice should be sought from an experienced nutritional or herd health adviser before making any significant changes to diet formulations or dairy herd health and management.

Further information regarding drought feeding and resources can be found at the Subtropical Dairy website www.dairyinfo.biz/drought-assistance/

The Feed Plu$ feed analysis database is available online at dairyinfo.biz and is a good source of feed analysis results which can be used as indicators of common nutritional compositions of a range of feedstuffs that can be used to feed dairy cows www.dairyinfo.biz/technical-information/farm-business-management/FeedPlu$-ver4.0-feed-analysis-database/

The weekly Hay and Grain Report is available in the Subtropical Dairy eNews which is emailed to all farmers and service providers in the Subtropical Dairy region each Thursday.

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Principles of preventing mastitis

At a farm gate price of 68 c/L of milk, each clinical case of mastitis costs the farmer around $340 in antibiotics, deaths, vet fees, discarded milk, lost production from a dried off quarter, labour, culling and plant costs. Over a year and throughout a typical herd, this adds to a considerable sum.

The principles of preventing mastitis can be summarised as follows:

1. **Teat biology**

The teat is where it all happens. It is thick, keratinised and has no glands and is therefore susceptible to drying out. The teat canal is about one cm long and should be closed when not milking and open when milking. Cells grow from the inside to the outside and then slough off and then trap the sticky bacteria. When the milk comes out it also flushes bacteria out. If a cow misses a milking, the bacteria and cells are not stripped away and infection builds.

- More infection occurs when there are more bacteria near the teat end.
- More infection also occurs when the teat canals ability to resist infection is compromised.

Maintaining control of mastitis can be summed up by maintaining healthy teat ends and reducing the number of bacteria on the teats.

2. **Mastitis control should be seen as building a wall of defence**

Take one brick out of the wall and the wall may not break down but it will weaken. Remove too many bricks out of the wall and it will fall. Don’t do the practices properly and the mortar between the bricks will dissolve, rather than the bricks themselves being removed.

A section of the Mastitis Defence Wall

<table>
<thead>
<tr>
<th>Machine maintenance</th>
<th>Plant Hygiene</th>
<th>Laneway &amp; Feed pad maintenance</th>
<th>Udder preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Method</td>
<td>Teat disinfection</td>
<td>Milking Hygiene</td>
<td>Segregation of clinical cows</td>
</tr>
<tr>
<td>Culling</td>
<td>Records &amp; Identification</td>
<td>Dry cow therapy</td>
<td></td>
</tr>
</tbody>
</table>

3. **Identifying clinical cases**

Check for abnormal milk: the in-line strainer will trap clots and should be checked after each cow, swollen quarters; foremilk stripping; checking suspect cows; sample milk for culturing; increased Bulk Milk Cell Count (BMCC).

The BMCC in milk is actually from the animals own white-blood cells building up in a fight with the bacterial infection in the udder. If there are lots of individually infected cows in the herd, the BMCC will show high counts.

- Normal cows have a cell count between 20,000 and 200,000 cells/mL.
- Above 250,000 cells/mL usually indicates that there are mastitis infections in the udders.
- Above 400,000 cells/mL indicates that this milk is unfit for human consumption.

Each 100,000 cells/mL indicates that 10% of the herd has some sort of subclinical mastitis, so a herd with a BMCC of 240,000 cells/mL is likely to have about 24% of the herd with subclinical mastitis or 240 cows out of a 1000 cow herd.

4. **Teat disinfection**

Teat disinfection is a major brick in the wall – it reduces bacteria and keeps the teats soft and supple (when an emollient [up to 10%] is used in the disinfectant). 20 mls of disinfectant/cow/milking is required when using a spray, if teats are dipped then about 10 mls of disinfectant/cow/milking is required. This number should be multiplied by the number of cows being milked and the times milked per day in order that an appropriate amount can be mixed fresh each day. Gold standard disinfectant is made fresh daily, with high quality water and at the right concentration. High mineral and sediments in the water inactivate the iodine.

5. **Maintain milking machines**

Machines that are not functioning correctly can contribute to new mastitis infections by:

- Spreading bacteria from teat to teat and cow to cow
- Damaging the teat ends and the natural defence mechanism of the teat canal
- Causing ‘impact’ of bacteria-laden droplets which hang on the bottom of the teat (or in the milking cups), into the teat canal, especially towards the end of milking.

Milk machine maintenance – Check:

- vacuum gauges
- oil in the pump
- pulsators
- condition of the liners
- air filters
- vacuum regulators
- cow behaviour – kicks, steps
- tubes – check arrows line up

6. **Practical ways to prevent mastitis:**

- Stress free cows, gentle handling
- Clean laneways, clean teats
- Routine, cows love it
- Training heifers
- Maintain the order that cows come in
- Clean dry teats (wet teats cause ‘impact’, also the cups ride too high on wet teats and restrict milk flow)
- No splashing water on the teats
- Avoid milk on gloves
- Stimulate cows to let down by pre-stripping
- Teat disinfection (need to check the spray coverage and spray pattern using paper towel; 20 mls disinfectant/cow should be used when spraying, 10 mls disinfectant/cow when dipping teats)
- Milking out properly
Each 100,000 cells/mL indicates that 10% of the herd has some sort of subclinical mastitis, so a herd with a BMCC of 240,000 cells/mL is likely to have about 24% of the herd with subclinical mastitis or 240 cows out of a 1000 cow herd.
Lameness

Extremely wet conditions are associated with higher rates of lameness in dairy cows.

Prolonged exposure to moisture causes the hoof to soften, making bruising, penetration injuries and white-line disease more prevalent. The skin between the claws and around the foot also softens and macerates, leaving the skin more prone to infections such as footrot.

The higher bacterial loads present in wet muddy environments add to the problem. Larger stones and sharp gravel in farm tracks are also exposed after the fine topping materials are washed from track surfaces.

The issue

Lameness is associated with acute pain causing:

- A decrease in the cow’s ability to graze
- A loss of milk production (income)
- Lowered reproductive performance
- An increase in the chance of being culled
- Additional costs of veterinary treatment

The cost of an individual case of lameness is estimated to be between $200-$500, so if a herd outbreak occurs, the costs can quickly escalate.

Managing in wet conditions

<table>
<thead>
<tr>
<th>Common types</th>
<th>Signs</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetrating wounds to the sole / hoof abscess</td>
<td>Moderate to severe lameness, in severe cases may see discharging abscess just above skin/hoof junction</td>
<td>Cows with soft hooves treading on sharp stones on tracks, or small gravel pieces carried onto concrete on muddy feet</td>
</tr>
<tr>
<td>Bruised sole / worn sole</td>
<td>Moderate lameness, often in more than one hoof. May progress into a hoof abscess</td>
<td>Cows with soft hooves turning / standing on concrete wears the sole down. Cows walking long distances</td>
</tr>
<tr>
<td>Footrot</td>
<td>Very lame. Red, hot &amp; swollen foot with smelly, wet putrid skin between the claws</td>
<td>The skin between the claws becomes soft and damaged. Bacteria enter small cracks to establish infection</td>
</tr>
<tr>
<td>White-line disease</td>
<td>Moderate lameness. May progress to a hoof abscess or deeper infection if not treated early, resulting in a severely lame animal</td>
<td>Soft hooves turning on concrete causes a thickening of the white line. Small cracks develop across the white line allowing small stones, grit and bacteria to invade the internal tissues of the hoof</td>
</tr>
<tr>
<td>Axial wall cracks</td>
<td>Moderately lame on affected leg. Careful cleaning and examination of hoof between the claws is required</td>
<td>Starts as a small crack in the hoof wall which packs with dirt. More common in wet conditions</td>
</tr>
<tr>
<td>Lower leg injury / debris</td>
<td>Mildly to severely lame on affected leg or cuts to the skin on the lower limb(s)</td>
<td>Often associated with stones or debris caught between claws (with mud). Wire or other debris wrapped around the feet after floods</td>
</tr>
</tbody>
</table>

Prolonged exposure to moisture causes the hoof to soften, making bruising, penetration injuries and white-line disease more prevalent.
Management strategies

Stockmanship
Calm and patient stockmanship reduces wear and injuries to softened hooves. Cows will place their feet carefully if given time to walk at their own pace.

- Allow the herd to move slowly along tracks giving them time to choose where they place their feet.
- Consider putting slow walkers and young cows in a separate herd to improve cow flow. Smaller herds reduce the competitive pressure between cows.
- Give cows additional time to choose a path through restrictions or through areas where the track surface has been damaged.
- Refrain from honking horns or using barking dogs.

Take particular care on concrete and in the holding yard. Soft hooves are easily damaged by twisting, sliding sideways and turning on abrasive surfaces.

- Minimise the use of the backing gate.
- Avoid overcrowding in the yard.
- Let the cows move into the shed at their own pace.

Repairing track surfaces
Generally it is too wet to re-surface tracks during wet conditions but some preventative maintenance can reduce their deterioration.

- Carry a shovel and/or use a tractor blade to clear drains.
- Clear or cut drainage paths through mud that builds up on the edge of tracks to move the water off the track surface.
- Remove large or sharp stones and fill in potholes with fine screenings.
- Incorporating 0.3-1% cement in the capping repair material can help stabilise the surface.
- Compact repaired surfaces well.
- Fence off severely damaged areas of track that are beyond temporary repair.

Restoring the front hoof safely

Tracks can be topped with sawdust, woodchips or finely crushed rock/limestone as a temporary fix in areas that have deteriorated during wet conditions.

- Use a thick layer (at least 300mm thick) when using soft topping materials such as sawdust or woodchips. Use sleepers to keep the material contained.
- Consider topping the last 25m of track with sawdust or woodchips if the cattle are carrying stones onto the concrete holding yards.
- Placing a log / 125mm high concrete nib wall (for the cows to step over) at the laneway-yard junction can reduce the number of stones brought onto the concrete.

Protect hooves on concrete
Soft hooves are quickly worn down by rough concrete surfaces.

- Keep the concrete clean - remove stones from the concrete surface daily.
- Place protective mats, carpet or rubber tiles on turning areas.
- Strategically place protective mats to catch small stones brought onto the concrete yard and cushion cows’ feet. These mats must be cleaned off daily.
- Minimise the time cows spend on concrete, using calm and quiet handling techniques.

Ensure the diet is not contributing
Insufficient effective fibre or a rapid transition to a highly fermentable diet are risk factors for rumen acidosis. Acidosis (both clinical and sub-clinical) causes inflammation of the sensitive tissues of the hoof. This results in lameness and/or a disruption to the normal growth of horn tissue and poorer quality horn.

- Introduce changes to the diet slowly over 7-10 days, particularly if aiming to increase the level of grain / concentrate feeding by more than 2-3kg per day.
- Ensure the ration has adequate fibre. Aim for 35%NDF, half of which has sufficient stalk length (4-5cm) to stimulate chewing and saliva.

- Consider including rumen modifiers if dietary fibre is limited.
- Dietary supplements such as biotin and zinc are useful to strengthen the hoof when used for more than 6 months.
- Copper supplements can cause toxicity and should only be administered under veterinary advice.

Treatment strategies for clinical lameness
Early identification, diagnosis and treatment will improve cow welfare and minimise costs.

- Restrain cow and lift, wash and examine foot, taking special care to check for injuries or debris caught between claws or wire wrapped around lower limb.
- Remove any cow showing lameness from the herd for examination. Treatment costs and recovery times are greatly reduced if lameness is treated early.
- Treat lameness according to veterinary advice, based on the diagnosis (after washing and examining the affected foot).
- Use a block/’cowslip’ to remove weight from the affected claw (by blocking the sound claw).
- Minimise walking distances and the time spent on concrete for lame cows.
- Drying off or milking once a day could be considered for low producers / cows that are in poor condition.
- Review procedures / seek veterinary advice if the farm exceeds your lameness threshold and becomes a concern.
- Footbaths (at the dairy exit) are only indicated for bacterial footrot. They need to be cleaned and recharged daily to be effective. Seek veterinary advice as there are no chemicals registered for foot bath use for dairy cattle.
- Hoof mats at the dairy entry and lead up to milking platform may be a better option. Seek advice on appropriate chemical solutions from your vet.

www.dairyaustralia.com.au
# Feed Wastage

## PRACTICE AUDIT

This checklist compared feed wastage rate to the relevant target for each feed-out method used.

<table>
<thead>
<tr>
<th>FEED-OUT METHOD USED</th>
<th>TARGET*</th>
<th>OBSERVED / MEASURED</th>
<th>CHANGE?</th>
<th>THINGS TO CONSIDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>a In the dairy shed at milking</td>
<td>1%</td>
<td></td>
<td></td>
<td>Feeding system is not dispensing accurately and consistently into each bail</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Feed freshness, palatability and quality</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Build-up of stale feed in bails</td>
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<td></td>
<td></td>
<td></td>
<td>Bails are being over-filled</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Cows not hungry eg recently fed other feed</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sick cows in herd eg acidosis</td>
</tr>
<tr>
<td>b In grazing paddock, on pasture</td>
<td>5%</td>
<td></td>
<td></td>
<td>Wet conditions</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Pasture too long</td>
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<td></td>
<td></td>
<td></td>
<td>Hay/silage chopped too long</td>
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<td></td>
<td>PMR over or under processed</td>
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<td></td>
<td>Feed freshness, palatability and quality</td>
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<td>Cows not hungry eg recently fed other feed</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>Sick cows in herd eg acidosis</td>
</tr>
<tr>
<td>c Using temporary feed-out area, feeding on bare ground, in ring feeders, old tractor tyres or under fence line</td>
<td>5%</td>
<td></td>
<td></td>
<td>Wet conditions</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Hay/silage chopped too long</td>
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<td></td>
<td></td>
<td>PMR over or under processed</td>
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<td></td>
<td></td>
<td>Feed freshness, palatability and quality</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>Build-up of stale feed in feeders</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Feeders are being over-filled</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>Inadequate feeder space per cow</td>
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<td></td>
<td></td>
<td></td>
<td>Poor feeder design</td>
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<td></td>
<td></td>
<td></td>
<td>Cows not hungry eg recently fed other feed</td>
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<td></td>
<td></td>
<td></td>
<td>Sick cows in herd eg acidosis</td>
</tr>
<tr>
<td>d Using semi-permanent feed-out facility with a compacted surface and low-cost feed troughing</td>
<td>5%</td>
<td></td>
<td></td>
<td>Wet conditions</td>
</tr>
<tr>
<td></td>
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<td>Hay/silage chopped too long</td>
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<td>PMR/TMR over or under processed</td>
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<td></td>
<td></td>
<td>Feed freshness, palatability and quality</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Build-up of stale feed in troughs</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Troughs are being over-filled</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inadequate trough space per cow</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poor trough design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cows not hungry eg recently fed other feed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sick cows in herd eg acidosis</td>
</tr>
<tr>
<td>e Using permanent feedpad with a compacted surface and purpose-build feed troughing</td>
<td>2%</td>
<td></td>
<td></td>
<td>As per d)</td>
</tr>
<tr>
<td>f Using permanent, fully developed feedpad with concrete surfaces</td>
<td>1%</td>
<td></td>
<td></td>
<td>As per d)</td>
</tr>
</tbody>
</table>

* Minimum feed wastage rate achievable under dry conditions
### 2020 Event Calendar

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT</th>
<th>REGION</th>
<th>LOCATION</th>
<th>CONTACT PERSON</th>
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<tbody>
<tr>
<td><strong>March 2020</strong></td>
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<tr>
<td>5th</td>
<td><strong>Women in Dairy Discussion Group</strong></td>
<td>Sunshine</td>
<td>Pomona</td>
<td>Kylie Dennis 0456 191 965 <a href="mailto:kylie@subtropicaldairy.com.au">kylie@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>5th</td>
<td><strong>C4 Milk Open Day</strong></td>
<td>SEQ</td>
<td>Gatton</td>
<td>Belinda Haddow 0423 003638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
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<tr>
<td>6th</td>
<td><strong>Wine, Dine and Unwind Regional Dinner</strong></td>
<td>FNC NSW</td>
<td>Casino</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
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<tr>
<td>10th</td>
<td><strong>Regional Group meeting</strong></td>
<td>SEQ</td>
<td>Harrisville</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>11th</td>
<td><strong>Casino Kyogle Discussion Group</strong></td>
<td>FNC NSW</td>
<td>TBC</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
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<tr>
<td>12th</td>
<td><strong>Southern Downs Dairy Discussion Group – Farm Safety</strong></td>
<td>Darling Downs</td>
<td>Warwick</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>13th</td>
<td><strong>South East Qld Dairy Discussion Group – Farm Safety</strong></td>
<td>SEQ</td>
<td>Boonah</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>13th</td>
<td><strong>Regional Group meeting</strong></td>
<td>MNC NSW</td>
<td>TBC</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>20th</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>Burnett</td>
<td>Nanango</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>23rd</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>Sunshine</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>26th</td>
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<td>MNC NSW</td>
<td>TBC</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>26th</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>FNQ</td>
<td>Malanda</td>
<td>Jo Srhoj 0458 065 695 <a href="mailto:jo@subtropicaldairy.com.au">jo@subtropicaldairy.com.au</a></td>
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<tr>
<td>27th</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>FNC NSW</td>
<td>TBC</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
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<tr>
<td>30th</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>SEQ</td>
<td>TBC</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
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<tr>
<td>31st</td>
<td><strong>Managing Mastitis in Wet Conditions</strong></td>
<td>Darling Downs</td>
<td>TBC</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>TBC</td>
<td><strong>YDN ‘North vs South’ Indoor Cricket</strong></td>
<td>Darling Downs</td>
<td>Toowoomba</td>
<td>Belinda Haddow 0423 003 638 <a href="mailto:belinda@subtropicaldairy.com.au">belinda@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td>TBC</td>
<td><strong>Feeding Pastures for Profit Day 5</strong></td>
<td>MNC NSW</td>
<td>TBC</td>
<td>Alicia Richters 0427 916 650 <a href="mailto:alicia@subtropicaldairy.com.au">alicia@subtropicaldairy.com.au</a></td>
</tr>
<tr>
<td><strong>April 2020</strong></td>
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<tr>
<td>23rd</td>
<td><strong>Basic Nutrition workshop and farm visit</strong></td>
<td>FNQ</td>
<td>Malanda</td>
<td>Jo Srhoj 0458065695 <a href="mailto:jo@subtropicaldairy.com.au">jo@subtropicaldairy.com.au</a></td>
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<tr>
<td><strong>November 2020</strong></td>
<td></td>
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</tr>
<tr>
<td>22nd</td>
<td><strong>Australasian Dairy Science Symposium</strong></td>
<td>Sunshine</td>
<td>TBC</td>
<td>Dr David Barber 07 5460 1585 <a href="mailto:david.barber@daf.qld.gov.au">david.barber@daf.qld.gov.au</a></td>
</tr>
</tbody>
</table>
DATE CLAIMER

The 9th Australasian Dairy Science Symposium

A changing climate for dairy science

Starting 23rd November 2020
Sunshine Coast, Qld, Australia

A call for abstracts will be circulated in February 2020.
Selected abstracts will be offered the opportunity to prepare a paper for a special issue of Animal Production Science

For general enquiries about the symposium please contact

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E david.barber@daf.qld.gov.au

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E keith.pembleton@usq.edu.au

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Far North QLD
Joanna Srhoj
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