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Trouble shooting for sore feet in herds in winter

Article by Chris Lawton,
Browns Stockfeed

Most of our clients add organic Zinc to their winter rations well in advance of wet weather to harden feet. It takes about 4 weeks to work so being pro-active is always good management policy.

Biotin does not work as quickly- it can take 12 months of hoof growth to get quality growth so even if you already have Biotin in your ration, add Organic Zinc through winter. The added bonus is often an improvement in cell count at higher organic zinc addition rates too!

Copper is also needed for hoof strength so make sure you have a dairy premix with copper etc. included in the ration.

However - if you already have some soft sore feet in the herd and have added organic zinc but are waiting for it to assist- here are some practical strategies to take some of the "sting" out of the problem

- First of all please let us check that there is no low grade acidosis in the herd as this will cause sole haemorrhages that look just like bruising but are caused by toxic levels of lactic acid in the diet. Extra buffers etc. can be added or the level of fast starch like wheat can be changed/reduced, and the addition of fibre to the diet will help too.
- If it isn't acidosis - then mats or trays at the dairy can be used to foot bath the cows on entry. This ensures that the solution stays on the feet for at least the time they are in the shed rather than getting covered in mud immediately.
- These trays or mats (even old carpet) can be filled/ treated with either; Copper sulphate and water (helps bacterial issues) or zinc sulphate and water or 2% Formalin can be used as this is effective at hardening feet short term.
- Apparently the dairy company vets say that as long as it's a 2% solution you may use Formalin-not the 10% strength as it can come through in meat and milk
- Old carpet can be used on stony rough areas on the tracks (carpet stores are usually glad to give it to you) and while not pretty can help short term
- Often tracks need work but will need to wait until finances and weather permit work to be done.
- If it's not boggy then shavings /wood chips can be used in rough areas.
- Check foot shape - if toes are curled or crossed then pressure is unevenly applied to the foot- so a hoof trimmer can help sort this out for you.

Hopefully some of these suggestions may help herds get through the this time - please also remember that cows in low body condition score will get issues with sore feet as the pad of fat (Digital cushion) in the foot is smaller so more bruising can occur as the bones in the feet receive more concussion - so fresh cows in light condition with stretched ligaments after calving are more prone to foot issues.



Hay Report

June has seen some quality hay come onto the market and growers are releasing some quality vetch and cereal shedded hay.

This is welcome as some dairy areas are still short of pasture for fresh cows and vetch hay would be suitable to fill pasture shortfalls. Quality cereal hay will be used for springers, and for the farmers who do have abundant pasture and require light long stem fibre to slow the passage of pasture through the gut in milkers.

Please contact Chris, Lindsay, Matt or Matt as they have details on what is available and price.

Grain Report

Rain continues to be favourable in Australia's grain growing areas especially on the Eastern seaboard, this will provide crops with good soil moisture coming into the warmer months.

We are still seeing plenty of demand from overseas markets for our grain, especially wheat, which for the time being has put a floor in the market, but hopefully within a few months once crops are up and out of the ground and export demand eases we should see prices soften as we move towards harvest.

There will be a point in the coming months to consider contract prices for the coming season, have a chat to your local nutritionist about new season prices.

The milk price/grain price equation explained

Article by Matt Hall,
Browns Stockfeed

Milk price for the financial year 2022 looks to be one of the highest prices we have seen. The industry has been talking about milk price and grain price as ratios for the last few years as if it can predict the margin in feeding grain to cows.

For example if your milk price is \$6.80/KgMS and your grain price is \$420/tonne your milk price and grain price ratio is $\$6.80/(\$420/100) = 1.62$, but what does this really tell you? It simply states how many times higher milk price is in \$/KgMS than grain price is in \$/t.

Some people interpret its meaning as if a milk price and grain price ratio over 1 represents the percentage return when you feed a kg of grain to a cow at that given milk price and grain price ratio, but that's not quite right as that assumes that the cow converts each tonne of feed fed to 100Kg of milk solids. I.e. a 1.62 ratio = a 62% return on your supplementary feeding investment when your milk price is \$6.80 and your grain price is \$420/t as fed. This is simply not true as the variables that impact the return to milk solids when feeding cows are great and the return to milk solids from feed is often not 100KgMS/tonne fed.

Feed conversion efficiency (FCE) is best defined as the amount of milk or weight gain that a dairy cow gives for any given amount of feed that is eaten. I have measured this as Kilograms of milk solids per tonne of dry matter fed to the cow. The range of feed conversion efficiency that I have seen is from 65KgMS/tDM fed to 120KgMS/tDM fed. In FY 2020 the average feed conversion efficiency to milk using the Dairy Farm Monitor Project figures for Gippsland was 85KgMS/t DM fed. This is not the quoted number in their figures as they do not calculate the number for publishing, I have calculated this ratio from their figures.

Milk Price and Grain Price Ratio	Feed conversion Efficiency KgMS/tDM fed	Estimated % Cash Return on Investment
1.62	83	35%
1.62	100	62%
1.62	110	78%

Here is a practical list of the things that have an impact on FCE in a dairy cow:

Dry Matter Intake - If a cow requires 7KgDM feed a day or 71mj of energy for maintenance and only eats 12KgDM for the day her milk production and therefore FCE will be lower than a cow that ate 20KgDM for the day. This is a case of a lower or higher percentage of the diet going to maintenance.

Example No 1 - 12kgDM intake at an average of 11mj/KgDM allows 5KgDM/cow/day for milk production or 55mj at 5.5mj/liter to produce the standard liter of 4.15%fat and 3.25% protein and the cow would produce 10 liters or 0.74KgMS/cow/day and has eaten 12KgDM as an intake. To get the FCE we divide Milk solid production by the cows dry matter intake in Kg. $0.74\text{KgMS}/0.012\text{tonnesDM}=62\text{KgMS}/\text{tDM intake}$.

Example No 2 - 20kgDM intake at an average of 11mj/KgDM allows 13KgDM/cow/day for milk production or 132mj at 5.5mj/liter to produce the standard liter of 4.15%fat and 3.25% protein and the cow would produce 24 liters or 1.78KgMS/cow/day and has eaten 20KgDM as an intake. To get the FCE we divide Milk solid production by the cows dry matter intake in Kg. $1.78\text{KgMS}/0.020\text{tonnesDM}=89\text{KgMS}/\text{tDM intake}$.

Factors that impact dry matter intake

a. Feed Volume Offered

The cow needs to be offered enough feed, this may seem like a simple thing but often cows are not fed all they could eat. Our dairy farming systems are mostly pasture based and often the cows are typically offered 60% to 80% of their diet as home grown forage (Pasture, silage, hay and crops). The measurement of pasture offered is practically done by eye and not measured so it is the most likely cause of under feeding cows on a daily basis and it is also the biggest part of the diet so it has the biggest impact on intake for the cow. **Cows that are not offered enough to eat simply don't eat as much as they could.**

When you incorporate feed conversion efficiency into a milk price and grain price ratio you can get a better idea of the predicted cash return for your investment although it's still a very rubbery number. The calculation is as follows:

Milk price and grain price ratio - $\$6.80/(\$420/100) = 1.62$

Feed conversion efficiency ratio

Example (a) $2.2\text{KgMS}/\text{cow}/\text{day}$ divided by $(.02\text{tDM intake}/\text{day}$ or $20\text{KgDM intake}/\text{cow}/\text{day}) = 110\text{KgMS}/\text{tDM fed}$.

Example (b) $1.5\text{KgMS}/\text{cow}/\text{day}$ divided by $(.018\text{tDM intake}/\text{day}$ or $18\text{KgDM intake}/\text{cow}/\text{day}) = 83\text{KgMS}/\text{tDM fed}$.

Both (a) and (b) scenarios are realistic and commonly occur on farms in Gippsland and both have very different outcomes in predicted margins when feeding cows.

For example, at a grain price and milk price ratio of 1.62 as above if a cow produced 100KgMS/tDM fed the return would be $1.62/1 = 1.62$ or a predicted 62% return when feeding a tonne of dry matter with the current diet and current situation.

If we use example (a) it would be $1.62/(100/110=0.909) = 1.78$ or a predicted 78% return when feeding a tonne of dry matter with the current diet and current situation.

If we use example (b) it would be $1.62/(100/83=1.20) = 1.35$ or a predicted 35% return when feeding a tonne of dry matter with the current diet and current situation.

Cows also don't adapt well to rapid changes in their diet so feed volumes increasing and decreasing rapidly does result in lower FCE. Having high volumes of pasture, silage, hay and crop and feeding it consistently is a great way of having cows with a very good FCE.

b. Fibre Content of Feed (NDF)

Dry matter intake (DMI) is restricted by fibre content of the feed once she has eaten to her capacity. So, if we offer her enough feed that she eats until she is full then additional intake is determined by how much fibre is in the feed she eats.

Home grown forage (pasture, silage, hay and crops) all have controllable levels of fibre in them. We measure this as Neutral Detergent Fibre (NDF). The sum that is commonly used to determine cow intake using NDF is as follows: $120/\text{NDF}\% \times \text{Live Weight} = \text{potential intake}$.

If we have a cow that weighs 550Kg and is eating a diet that averages 45%NDF her potential intake is 14.66KgDM/cow/day.

Another cow that weighs 550Kg and is eating a diet that averages 35%NDF her potential intake is 18.85KgDM/cow/day.

These two different potential intakes assume both cows are fed until they are full but the different levels of fibre in the feed determine potential intake.

Cows with higher intakes generally make more milk as their maintenance requirements are similar.

1. Animal Health

Cows that have good health are better at converting feed into milk.

a. Foot issues

Cows that cannot walk are cows that don't eat much, as two thirds of the cows diet is normally from home grown forage. Causes of foot issues are typically from wet conditions, stones on tracks or concrete and acidosis. Please see more information in this newsletter on foot issues.

b. Acidosis

This is an animal health issue that is most commonly caused by a rapid release of starch or fast fermenting feed in the rumen. When feeding higher rates of cereal grain or very rich pasture the addition of fibre to the diet as hay is of great benefit, although used in conjunction with a buffer in the dairy grain mix becomes a very effective control for that part of the diet.

Often cows that are not offered as much as they can eat suffer from acidosis; (half empty rumens), and this can be sorted out by offering them more to eat and encouraging optimum rumen function.

c. Milk Fever

This is a lack of available calcium in the blood and is often contributed to by feeding less calcium to cows than needed. It is also strongly influenced by the diet in the three weeks prior to calving until joining, "the transition period". Plenty of calcium needs to be fed in the diet all year round. Milk Fever has a big impact on feed conversion efficiency as its often not recognized when its subclinical or mild but it still has a big impact on the cow. (Ca plays a huge role in the immune system and cow health and intake (see above).

d. Grass Tetany

This is a lack of available magnesium in the cow and is often an issue in cool conditions with lots of young pasture in the diet on faster grazing rotations. The pasture has high levels of potassium which makes magnesium less available to the cow. This impacts the cows' ability to maintain normal metabolic function and has a major impact on feed conversion efficiency.

e. Mycotoxin's

Mycotoxins can come from many sources but are most commonly created by moldy or very wet silage and pastures with excessive trash in humid conditions. The mycotoxins accumulate in the liver and create lower levels of liver function in cows which creates inefficiencies/illness in the cow which results in lower levels of feed conversion efficiency. Strongly correlates with Herd health too!- see above).

f. Facial Eczema

Facial Eczema is often thought of as a mycotoxin issue but it is a different type of spore that is produced by the mycotoxins involved and is called Sporidesmin. These spores create permanent liver damage in the cow. The liver damage and ongoing reduced liver function has a big impact on feed conversion efficacy for dairy cows.

2. Diet Balance

The role of concentrates in a dairy cows' diet, in a pasture based system, is to complement the home grown forage in the diet. It does this by adding energy (Starch), protein (rumen degradable and bypass), fibre and where appropriate additives for mineral nutrition and animal health.

If used well, an appropriate dairy grain mix can strongly contribute to feed conversion efficiency and increased margin or income over supplementary feed costs.

3. Days In Milk

Cows that have milked for longer than 310 days tend to have lower feed conversion efficiency and herds that have a lot of cows on long lactations due to not in calf rates being high have lower feed conversion efficiency.

4. Genetic Merit

Herds with high levels of genetic merit do have higher levels of feed conversion efficiency but this is only obvious after they have been fully fed with a well managed diet for high levels of intake, the diet is suitable for the stage of lactation and all animal health issues are dealt with.

Conclusion.. As you can see feeding cows in a pasture based system is not as simple as looking at a milk price and grain price ratio and then making a decision to feed without further thought and assuming that a margin will result. The business of dairy farming is complex and has a lot of moving parts that interact that need to be well understood by the business operator and advisors. This is where your Browns Nutritionist can help - to make more \$ from your herd with healthy cows.