

FEED TROUGH

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WHAT'S HAPPENING IN THE PIT?

With reasonable pasture yields last season many dairy farms still have some silage covered up in pits or wrapped in rolls. So now it's approximately six months since ensiling what is happening in terms of quality and biology with that silage?

A worst case scenario is that conditions were very wet, rainy and muddy at the ensiling stage. Even though the pasture quality, composition and cutting time was generally good, there was not enough compaction. The silage pit was covered with poor quality plastic and unfortunately the birds pecked holes in the silage rolls. Before getting fed out the silage face is being exposed to air for long periods of time and no preservatives or inoculants were used at the ensiling stage. I'm sure we can all relate to one or more of these events which can lead to the deterioration of your silage you have worked so hard on growing.
Tammy Negus, Editor.

What can you expect to see in your silage, plus what can't you see?

Trevor Schoorl, Technical Services Manager with Quality Silage Systems and Lallemand Animal Nutrition, and Tammy Negus

Time exposed to air, water and dirt leads to silage quality and quantity deterioration from spoilage growths. Spoilage organisms come in several different forms and some are visual but many are not. Yeast and Mould growth are the most visual and occur in many different colours and forms.

Yeast and moulds grow when we have the above conditions and will start growing immediately with the resulting silage becoming

low in energy, low in protein, have poor palatability and become unstable. When feeding out the unstable, spoilt fodder, dry matter tonnes retrieved from the silage pit is reduced along with dry matter intake in the cows. The ME (Metabolisable Energy) is reduced due to being consumed by spoilage organisms and the protein is either bound up or burnt off, hence our quality is very much reduced and unpalatable which leads to poor animal performances. This obviously affects animal intake hence production but also can have extremely detrimental effects on animal health due to the formation of toxins.

Mycotoxins are toxins produced by certain types of moulds and fungi. Often harmful bacteria Coliforms and Clostridia's can also occur with the above conditions which also have major impacts on silage quality and quantity hence animal health and performance.

We recommend you aim to improve your silage production by following certain steps in the spring to avoid issues like above. The good news is that there are some excellent bacterial forage inoculants. Well researched reputable bacterial inoculants have the ability to acidify the forage mass quickly and efficiently creating an environment where spoilage organisms cannot grow. Spoilage organisms will not grow while we maintain a low pH and anaerobic environment. Inoculants are an essential tool and form part of best silage making practices.

For further information Trevor Schoorl will be down at the pit at DID day to discuss the key indicators of optimizing silage quality and performance from crop to cow, and he has an incredible amount of experience in silage and ruminant nutrition.

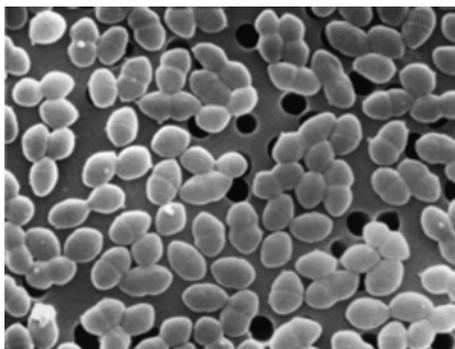


Figure 1. Shows an electron microscope photograph of clostridia bacteria.

Pictures sourced and provided by www.informedfarmers.com



Figure 2. A typical white spoilage mould on pasture silage.

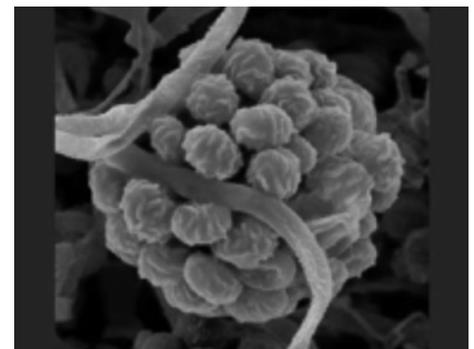


Figure 3. A Fungi *Stachybotys* spp. This can produce the mycotoxin compound trichothecene

Optimum cow feeding management

Elevated Dietary Nitrogen

Dario emphasised that the change in diet from a conserved forage/supplement ration to an actively growing ryegrass/supplement ration, requires an adaptation period of around five weeks for the rumen micro flora population to adjust and effectively utilise the ration. One of the challenges faced by the microbes is the potentially higher nitrogen (N) content of the new diet due to the elevated plant nitrate levels. Dry land soils with a low Carbon to Nitrogen ratio and adequate moisture will undergo rapid mineralisation releasing significant amounts of N for plant growth. Capeweed is a notorious accumulator of nitrate under the right conditions and ryegrass can also be high.

Data from pasture sampled at Vasse Research Station in May following the break reveals a crude protein (CP) content of 28% even with no application of N fertiliser. If a supplement ration has a CP content of 16% - 18% to meet lactation requirements, then replacing the silage with pasture will provide more N than the microbes can handle and the cow will look at excreting excess N in the urine. The rumen bugs digest dietary N down to ammonia which they use for their own growth, and surplus ammonia is rapidly absorbed across the rumen wall and into the bloodstream where it will be metabolised by the liver into urea. Dario explained that where this process can't keep up with blood ammonia levels then the cow will exhibit signs of ammonia toxicity with cows displaying a lethargic 'dumb' appearance.

In the rumen, nitrate is reduced to nitrite and then to ammonia by the bugs. If the bugs can't keep up with the process then excess nitrite will be absorbed into the blood stream where it reacts with oxygen-carrying haemoglobin to form methaemoglobin that can't transport oxygen. The result is anoxia or oxygen starvation, which if not managed can result in death.

To reduce these negative impacts of high nitrogen levels in the feed Dario suggests:

- Avoid fertiliser N applications to pasture before the first grazing round.

- Don't make abrupt changes to the ration
- Reduce the crude protein level of the supplement but if there is a higher proportion of rapidly digestible starch then there is a greater risk of acidosis
- Reduce the supplement level on offer to encourage the cows to eat pasture if they are reluctant to do so

Lower Effective Particle Neutral Detergent Fibre (NDF)

Feed particles of general size (<6mm) will be regurgitated and re-chewed by the cow and this rumination activity results in more saliva entering the rumen to buffer rumen pH. Lush 2-leaf stage ryegrass has a reduced e-NDF fraction and coupled with the low e-NDF levels in grain supplements the diet will have a higher risk of acidosis. Implementing a gradual change over onto pasture will help but always make sure the e-NDF levels in the diet are adequate.

Minerals Matter

Dario warned about the negative impacts of a high DCAD (dietary cation anion difference) ration on calving cows and milk fever. High pasture K (potassium) will often result in a positive DCAD level in the diet. High DCAD diets predispose to milk fever through an alkalinising effect on blood pH that interferes negatively with the cow's ability to mobilise calcium. High plant K reflects high soil K and the result is that the plant will have lowered Mg (magnesium) levels that could result in a Mg deficiency. This is compounded by the fact that in the digestive tract, high dietary K interferes with the animals' ability to absorb dietary Mg. Dario suggests farmers should:

- Avoid pasture with known high K levels for pre and postpartum cows
- Avoid applying potash fertiliser in autumn before grazing, if needed it can be applied after the first grazing
- Use lead feed as this is designed to address dietary DCAD and Mg
- Adding causomag (magnesium oxide) where necessary. Causomag also acts as an alkalinising agent, raising rumen pH.

MANAGING COWS AND PASTURE THROUGH THE AUTUMN BREAK

The autumn break presents dairy farmers with a few management challenges concerning their dryland pasture and cows. It is a time of change and unless change is managed it can lead to reduced productivity. At a round of seminars hosted in late March and early April 2012 by FRDS (Future Ready Dairy

Systems) and Western Dairy, Dr Dario Nandapi (Smartcow Consulting) and Sam Taylor (agVivo) spoke on the key decisions around cow nutrition and soil/pasture respectively. There was plenty of valuable information given during the seminars and the informal atmosphere encouraged farmers to raise a number of

issues. Farmers do benefit from attending seminars especially where there is a good level of expertise available and Western Dairy would encourage farmers to take advantage of these seminars.

For Upcoming dairy industry events contact Rob LaGrange, 0448 939 344.

Flexible Feeding Systems Western Australia

An exciting new WA Dairy project has commenced in 2012 to investigate more efficient use of grain and concentrates for milkers. It is a three year research project funded by the DAFWA and Dairy Australia, and is part of a national project operated from Ellinbank Research Centre in Victoria.

WA dairy farmers will be actively involved in the project with 13 partner farms intensively monitored for their grain/concentrate

feeding management practices from March 2012 to June 2013. Particular interest will be taken in partial mixed ration (PMR) feeding systems where all the grain is fed in the bale separate from the forage in the paddock.

For further information on this research contact Martin Staines phone 08 9780 6288 or martin.stains@agric.wa.gov.au

MANAGING SOIL AND PASTURE THROUGH THE AUTUMN BREAK

Liming: Sam spoke about getting the soil pH to target levels of 5.5 (CaCl). Refer to your soil test results to assess rates required and think about doing a smaller area with higher applications of lime rather than large areas at lower rates. Consider the lime source and quality.

SOIL NUTRIENTS

Potassium (K): Available K in the soil is readily taken up by pasture plants and can reach detrimental levels in plant tissue. K is vital for clover growth and seed set as well as for ryegrass seed set and needs to be applied strategically to match plant demand. Autumn growth rates are lower than seen in spring and fall away through the winter.

Plant tissue tests: These are important to establish where you stand in relation to K requirements. Sam suggested that soil Colwell K levels can be a guide for autumn applications. Soil Colwell K less than 40-50 mg/kg could benefit from applications of 10-15 kg/ha of K. At levels between 60-100 mg/kg plant tests will determine whether fertiliser K should be applied. At soil tests over 100 mg/kg Colwell K there will be no response to applied K. The high growth rates in spring will mean higher K requirements at this time and paddocks earmarked for silage and hay should receive extra applications of K.

Phosphorous (P): Widespread soil tests have revealed that many farms have adequate levels of P and knowing the P status of their soils can help assess whether P fertiliser can be reduced. Costs saved on applying P above what is required can be significant.

Sulphur(S): Plant available S needs to be monitored. If farmers reduce applications of superphosphate because they don't need the P there will be less S applied. S can be quite mobile especially in sandier soils and plant S availability can be affected by wet conditions. It is advisable to consider applying N and S in combination through the wetter months.

Plant tissue tests are recommended to give an indication of the above nutrient levels and also to help determine whether applications of fertiliser copper or zinc are needed.

CLOVERS AND RHIZOBIA ACTIVITY

Clovers need to be managed carefully to ensure their persistence. The proportion of clover in the sward can be monitored but Sam advises to check for rhizobia activity. Rhizobia develop on clover plant roots in nodules and are involved in fixing atmospheric N in the soil. Good rhizobia activity is indicated by the presence of many nodules that have a pinkish discolouration. Inoculating the soil with the appropriate strains of rhizobia may be required. Numerous nodules that are grey in colour could be an indication of insufficient soil Mo (molybdenum). Consult a local agronomist on actions to take to improve rhizobia effectiveness.

INSECT PESTS

Pests that have been a problem in WA pastures during autumn include cutworm, African black beetle and red legged earth mite. Seeds coated with imidacloprid will help control red legged earth mite and lucerne flea infestation. Bifenthrin can be effective against red legged earth mite and cutworm when sowing pastures. Make sure you take note of the grazing withholding periods for pesticides.

African black beetle are sub surface feeders and are difficult to control. Experts in DAFWA advise that effective management of kikuyu is the key to keeping the black beetle populations down. The beetle's preferred food source is decaying organic matter and will thrive under decaying kikuyu thatch. To help understand what is available for African black beetle control farmers should discuss their insecticide usage with their local agronomist and always check the pesticide label.

Meet the Regional Feedbase Coordinator

Western Dairy welcomes Tammy Negus (nee Eckersley) to the role of the Regional Feedbase Coordinator. Most people would recognise Tammy as the Elders agronomist and now she is responsible for coordinating the feedbase farmer meetings, establishing key issues involving growing fodder and animal nutrition, this publication the FeedTrough, demonstration trials and other feedbase activities on behalf of Western Dairy.

Tammy works and lives on a dairy farm with her husband Oscar and parents in law Oscar and Wendy in Tutunup. She is originally from a broadacre farm in Wagin and grew up in Capel in the southwest of WA. Always with a passion for science, animal health and agriculture she completed her tertiary studies at Murdoch University in Biological science with Honours in Microbiology. The last 9 years she has spent working as an agronomist specialising in broadacre cropping and pastures in Narrogin and then horticulture, pastures and mixed cropping in Bunbury.

As well as advising and contract agronomy Tammy is currently furthering her studies in Human Resources specialising in Dairy Human Resources Services as well as taking on the

role as coordinator for the South West Young Dairy Farmers group.

Tammy Negus can be contacted on 0448 532 028.



Photo: Rob La Grange and Tammy Negus looking at a feed pad design and silage quality.

Are you considering a feed pad?

If you want to improve your feeding management and efficiency on the dairy farm then this is certainly a great asset. Coming into winter a feed pad is often a good place to concentrate animals, reduce the pugging of pasture in wet conditions and manage winter feeding. Dairy regions like Gippsland have had some of the wettest years on record and have found feed pads invaluable for minimising soil and pasture damage and maintaining cow health. Ultimately it can mean more available pasture for the milkers, saves time, reduces the wastage of supplementary feed, saves money, plus contains and controls the effluent to protect the environment or for re-use on farm.

Feed pads don't have to be the "Rolls Royce" type. Budgets don't always allow for this and for farmers leasing land there is a need to limit capital expenditure. There are low, medium and higher cost options available. Prior to going ahead with the building consider some aspects of design and construction to maximise your investment. The design will vary depending on your farm location and operation. Also choose the right time to build one – avoid wet winter conditions. See below list of considerations when designing a feed pad:

CONSIDERATION	COMMENTS
Orientation	Facing it north or northeast gives maximum exposure to the sun, promotes drying and reduces bacterial populations. Facing east-west maximises the shade for hotter environments.
Size	Consider your maximum herd size and potential increase in cow numbers. Cows need to move freely on and off the area easily as well as feed so allow 4-5m width.
Surface Material	The feeding area needs to withstand high amounts of continual traffic so reinforced concrete is ideal. The concrete should be 100 - 150mm deep, strength of 30MPa, with F52 to F82 mesh placed 25mm up from the bottom. The surface needs to be rough enough to prevent cows slipping but minimising hoof damage. Rubber mats can be set up in certain areas for cow comfort
Feed Trough	Consider the size, number, location and height of troughs. Investigations at Dpi Qld show that the optimum design uses troughs of at least 1.2m internal width for two sided feeding, with sides at least 400mm high. Give about 0.6m trough space per cow to ensure all cows can have access to the supplement at the same time and to allow for bullying.
Water Supply	Milking cows require about 70L of water a day so ideally provide a high volume water trough near the pad but away from the feeding zone so that cows can come and go. Sprinklers can also be set up to keep cows cool.
Drainage	A feed pad is often only as successful as its drainage. Ensure a fall from 1 in 20 to 1 in 40 to allow rainfall run-off and efficiency with wash down devices.
Maintenance	The structure needs to be easily cleaned so consider accessibility to troughs and for vehicles. If the feed pad is not cleaned regularly a build-up of manure and dirt contributes to mastitis and other animal health issues.
Cover	A roof or shed over the pad can provide shade and shelter from heat, rainfall and wind.

For more information on feed pad design and feeding systems read Feed Pads DOWN UNDER by T. Davison & J Andrews or go to www.dpi.vic.gov.au

Welcome WA's Dairy Industry Development Specialist

Western Dairy is pleased to welcome Rob La Grange to this exciting new role. Many of you may have already met Rob as he has been actively out and about on farm and at industry events. He will be a brilliant support to dairy farmers and is hoping to hold various focus groups including young farmer and staff development groups. He will also be involved in facilitating effluent upgrades, helping to manage the Cows Create Careers project, as well as coordinating apprenticeship training between the farmer trainers and the Great Southern Institute of Technology.

Rob is passionate about the dairy industry and brings with him a wealth of experience and knowledge particularly in group training and farm production. He was born and raised in Zimbabwe to a farming family and obtained a BSc honours degree in agriculture from Natal University in South Africa. In Zimbabwe he worked in extension to the beef and dairy industries and lectured in animal husbandry as well as managing the college TMR (Total Mixed Ration) dairy enterprise.

Rob and his wife and daughters moved to New Zealand in 2000 where he worked in the dairy industry experiencing a "hands on" role

on a 320 cow herd in Southland. He later took on positions in dairy training and extension for Agriculture NZ and Dairy NZ working in Whangarei North and North Waikato. In 2006 he managed the Pasture Plu\$ and Dairy Smart projects in Tasmania and later took part in the running of the Demonstration Farm where the best management guidelines were produced in animal health, feedbase, OH&S, natural resources and environment, business and human resources.

Rob will be actively involved in the regional feedbase group and as well as support for the dairy industry and its members. Rob can be contacted on 0448 939 344.

The Feedtrough is published by Western Dairy and edited by Western Dairy's Regional Feedbase Development Group coordinator Tammy Negus.

Previous issues of the Feedtrough are available at www.westerndairy.com.au
To contribute to the Feedtrough please email Tammy at tammy.negus@gmail.com



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