



SPECIFIC  
FOR YOUR  
SUCCESS

IN THE

# MIX #50

## Corn silage for beef cattle

*Page 10*





2019 International LEVUCCELL SB meeting in Institut Pasteur, Paris, France

**SPECIFIC  
FOR YOUR  
SUCCESS**

## IN THE MIX #50

DECEMBER 2019

# Welcome

Welcome to another jam packed edition of "In The Mix". There are some valuable articles in here for all of you!

This year has been a tough one with many challenges and changes here at Lallemand. Firstly and most importantly I want to acknowledge everyone for their tremendous support as we dealt with the loss of our friend and colleague Trevor Schoorl. We all still miss him daily! We've welcomed two new team members with Nathan Lister based in Toowoomba and Katrina Hubeek in SE VIC, but we have had to say goodbye to Natalie Schwerin. Nat had been with Lallemand for nearly nine years and achieved a great deal but has as taken up a nutritionist role in Brisbane. Congratulations and all the best, Nat.

The silage season has been crazy and we've ensiled the widest variety of crops we've ever had in a season. The team have also been busy talking to customers about new technologies in gut health and positive biofilms!

Enjoy this edition and have a safe and happy Xmas Season.

**Alex Turney - Country Manager**



## LALLEMAND HOLIDAY HOURS

The office will close from 12pm on December 24th, and remain closed for all public holidays. The office will reopen the 2nd January, 2020.

Ensure orders are placed before Friday 16th December to ensure delivery prior Christmas (on the east coast).

For general enquiries:

+61 (07) 5451 0125

PO Box 6122, Maroochydore BC QLD 4558

LAN-Aus@lallemand.com

www.lallemandanimalnutrition.com

*In The Mix is Lallemand Australia's newsletter intended for professionals of the feed and livestock industry. This publication and its contents including any research data is, unless otherwise specifically attributed, the intellectual property of Lallemand Australia Pty Ltd, a trading division of Lallemand Inc ("Lallemand") and may not be copied or reproduced or distributed, in whole or in part, without the prior consent of Lallemand.*

## Selenium plays a role in bone health

Bone health is a growing concern for both livestock and companion animals, and it is a key element in animal welfare. In livestock, factors such as genetic selection, high productivity or management practices help explain growing bone health issues. And, like humans, ageing pets and horses are also increasingly concerned by osteoarticular problems. Recent research indicates that selenium (Se) plays a key role in bone health and bone tissue formation. Bones represent the second biggest reservoir of Se in the body after skeletal muscles. For instance, human bones contain approximately 80 ng/g of this trace element. A literature review of the past 15 years of research indicates the involvement of Se in bone health has mainly been attributed to its:

- **Preventive function** against oxidative stress
- Role on the **inflammatory and immune systems**
- **Involvement in cell division**, proliferation and apoptosis processes

Recent research conducted by Lallemand on poultry as animal models for bone health indicates that Se yeast supplementation could benefit both the bone mineralisation process in growing animals and bone quality in adult productive animals.

## 2019 LEVUCCELL SB International Technical Meeting

**From the sow to the piglet, addressing the challenges of modern pig production through microbiota management.**

On October 23rd, 130 swine professionals from 30 countries around the world gathered at Institut Pasteur in Paris for the special edition of Lallemand Animal Nutrition International Levucell SB meeting. For this special edition, ten international experts occupied the stage, combining inspirational lectures on topics such as sow behavior around farrowing, mycotoxins in pigs, immunity, or brain gut microbiota communication with technical presentations on the latest findings about the live yeast modes of action and applied testimonials from various markets, including China, Colombia, and Spain.

During the past decade, pig production has tremendously evolved and the industry has had to adapt to face issues linked to sow hyperprolificacy while antimicrobial usage reduction has become a worldwide concern within the "one health" context.

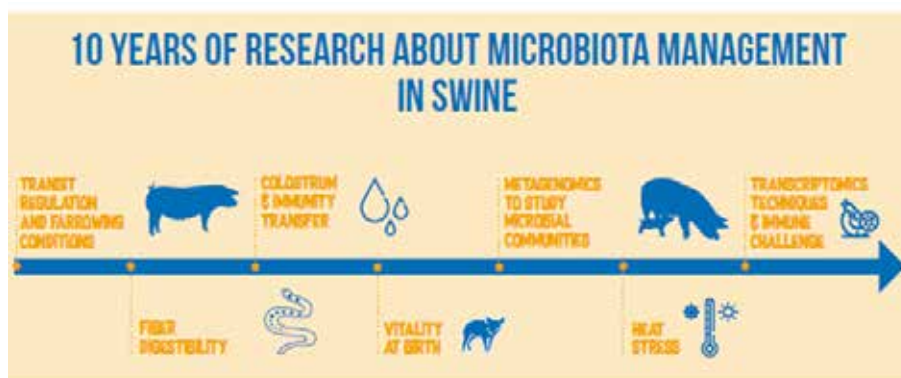
Fifteen years ago, LEVUCCELL SB (*Saccharomyces cerevisiae boulardii* CNCM I-1079) usage was in its early days in swine, and the research and development journey was just starting. Today, from sow to piglets - and now on to fattening pigs - the live yeast

concept and applications of *S. cerevisiae boulardii* CNCM I-1079 benefit from sound science, with documented benefits along the whole production cycle<sup>1</sup>. This special meeting was the occasion to look back at the ten past meetings and look into the future for this approach which remains more relevant than ever.

Participants appreciated the good balance between technical information, forward-looking science and more applied, commercial oriented results, such as neonatal diarrhea management strategies.

David Saornil, Product Manager - Swine Applications, Lallemand Animal Nutrition, commented: "We were very proud to host this special edition of our International Levucell SB meeting, in such an inspiring location as Institut Pasteur, the late home of Louis Pasteur, the father of microbiology! We have come a long way over the past decade and the outlook for future research is bright, thanks to important research and development commitment from Lallemand, and access to new techniques such as OMICS as well as the development on in vivo and in vitro models, that are enabling us to explore new applications to address the markets issues of today and tomorrow".

For more information, you can contact us for a complete report of the meeting.



## FOOTY TIPPING RESULTS

Thank you to everyone who participated in the Lallemand Tipping Competition this year. Gift cards have been sent to our winners:

### ■ NRL

1. Jeff Dight
2. Briana Daly
3. David Henman

### ■ AFL

1. Peter Gronow
2. Jason Amos
3. Wayne Thompson

### ■ SUPER RUGBY

1. Geoff Irish
2. Wayne Thompson
3. Alex Turney

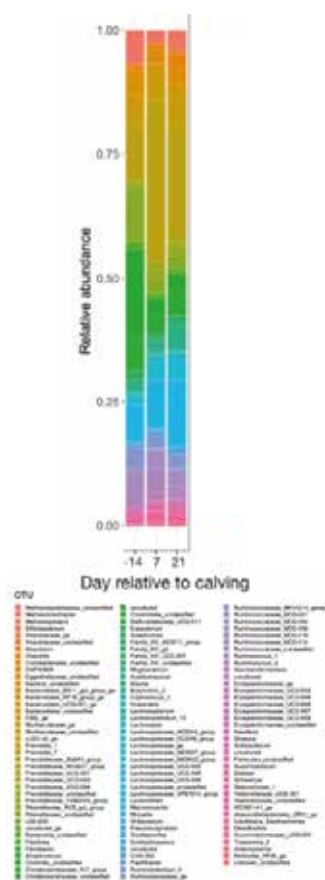
If you are interested in participating next year, please contact the office.



## Dairy cow transition challenges the rumen microbiota

Ref: Bach A, Guasch I, Elcoso G, Chaucheyras-Durand F, Castex M, Fàbregas F, García-Fruitos E, Aris A. Changes in gene expression in the rumen and colon epithelia during the dry period through lactation of dairy cows and effects of live yeast supplementation. *J Dairy Sci.* 2018 Mar;101(3):2631-2640

Bach A., López-García A., González-Recio O., Elcoso G., Fàbregas F., Chaucheyras-Durand F., Castex M.. Changes in the rumen and colon microbiota and effects of live yeast dietary supplementation during the transition from the dry period to lactation of dairy cows. *J Dairy Sci.* 2019 Jul;102(7):6180-6198.



**Figure 1**

Relative abundance of the genera detected in the rumen of dairy cattle as influenced by time relative to calving. OTU = operational taxonomic units. (Adapt. from Bach et al., 2019)

Last year, breakthrough research was published detailing the effects of the calving transition on the rumen wall (Bach et al., 2018). This study — which made innovative use of endoscopy to monitor rumen health — is now complemented with metagenomics data, confirming the challenges of the transition period for the rumen microbiota and the protective role of *Saccharomyces cerevisiae* CNCM I-1077 (Bach et al., 2019).

### ■ Understanding metagenomics data

Metagenomic is the genetic identification of the whole microbiota of a host and, most importantly, in our case, their relative abundance. These technologies generate millions of genetic sequences. Thanks to biostatistics analysis, this data could be pooled together according to bacteria genus—which shows more than a hundred of different bacteria types (Figure 1).

In the case of transition cows, the goal was to look at the abundance of functionally relevant bacteria on a nutritional point of view. Results from two main categories of microbes were combined, based on their function, regardless of their identity: bacteria, which are degrading complex carbohydrates, such as fibre; and bacteria degrading rapidly fermentable carbohydrates, like starch (Figure 2).

**Before calving**, the relative proportion of the **fibre-degrading bacteria** is higher than the ones thriving on rapidly fermentable

carbohydrates. **Post-calving**, there is a rapid shift towards a higher proportion of **bacteria degrading rapidly fermentable carbohydrates**.

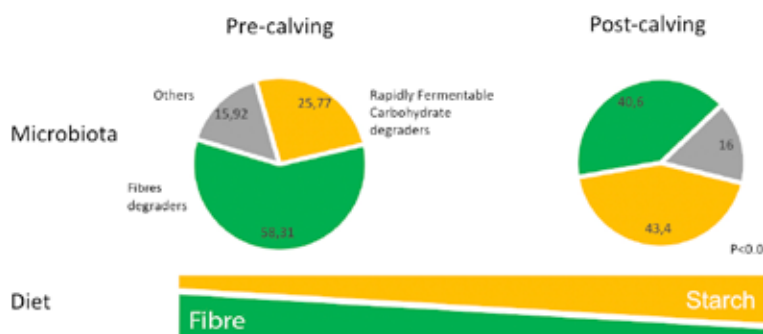
### ■ Protective role of live yeast

The previous analysis of rumen wall gene expression has shown that feeding *S. cerevisiae* CNCM I-1077 from three weeks pre-calving helps prepare the cow's rumen wall to face the stress of diet transition and of the related inflammatory challenges. The metagenomics data further indicate a protective role:

- **Pre-calving**, the relative **proportion of fibre-degrading populations** is significantly higher ( $P < 0.05$ ).
- **Post calving**, the live yeast group show a higher dry matter intake, leading to +1.21kg/ day of non-fibre carbohydrate. This would have negatively impacted rumen pH and microbial balance leading to a higher proportion of rapidly carbohydrate degraders. Instead of that, there was no statistical difference with the control group that consumed less fermentable carbohydrates.

It was concluded that the live yeast:

- **PRE-CALVING**, increases the cellulolytic microbiota,
- **POST-CALVING**, by stabilising the rumen pH despite the higher non fibre intake, limits the burst of rapidly fermentable carbohydrates degraders

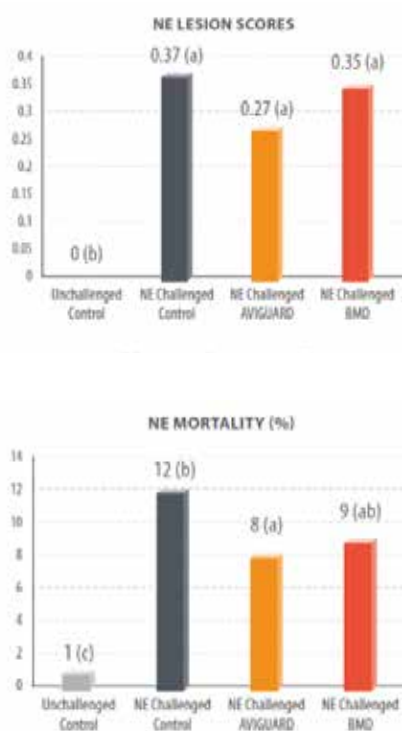


**Figure 2**

Affect of calving on functional microbes categories (Adapted from Bach et al., 2019)

## Necrotic enteritis in broilers

Ref: L Hofacre, Charles & J Reynolds, David & Mathis, Greg & S Lumpkins, Brett & Ollis, Nathaniel & A Smith, John & Demey, Vanessa. (2019). Effect of a Competitive Exclusion Culture in a Necrotic Enteritis Challenge Model in Broilers. The Journal of Applied Poultry Research, Volume 28, Issue 2, June 2019, Pages 350–355



**Figure 1**

Effect of the different treatments on the incidence of NE: Top) average lesion scores at day 21, Bottom) Mortality rate between day 1-42 (Entries with different letters are significantly different ( $p=0.009$ ))

**Necrotic enteritis (NE) is today the most common and costly bacterial disease in broiler farming. It is a multifactorial pathology caused by *Clostridium perfringens*. Its subclinical form significantly impairs flock performance, while its acute form causes high mortality. Recently, the limitation on the use of antibiotics in poultry production has seen a NE resurgence. Hence the interest in searching for novel effective tools to help prevent this issue. A recent publication indicates the potential of the competitive exclusion (CE) approach in this field.**

### Competitive Exclusion

CE solutions are cultures of beneficial bacteria that improve the digestive microbial balance. Their proposed modes of action include:

- 1) competition with undesired bacteria for nutrients and binding sites,
- 2) production of inhibitory molecules,
- 3) modification of gut pH,
- 4) production of antimicrobial substances such as bacteriocins, and
- 5) modulation of the local immune response.

The beneficial bacteria are administered as early as day one by spraying the chicks to promote the early establishment of a beneficial digestive microflora.

### New Trial

A trial was conducted in the United States (Southern Poultry Research, Georgia) to evaluate the effects of a CE solution (AVIGUARD) to help prevent the incidence of NE in a broiler commercial farm, as compared to traditional antibiotic feeding (Bacitracin Methylene Disalicylate, BMD). Male broiler chicks were fed a corn-soy commercial-type broiler 3 phases, at libitum.

The AVIGUARD group was treated with a single spraying at day 1. The antibiotic group received same basal feed with BMD throughout the trial (42 days).

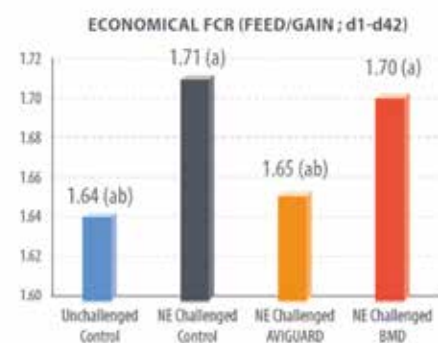
Chickens were challenged with coccidiosis at day 14 (*Eimeria maxima*) and then with *C. perfringens* at day 18, 19 and 20.

### Improved gut integrity and performance

After 42 days, NE lesion scores were the lowest with AVIGUARD, and NE mortality was significantly lower in the AVIGUARD group (Figure 1) as compared to control and antibiotic group. It was concluded that the CE solution, applied only once to the chicks, performed equal to, or better than, the antibiotic, which was fed continuously to the chicks.

When looking at growth performance, there was no significant difference observed for body weight or FCR between the AVIGUARD and the antibiotic groups. Consequently, due to a lower NE mortality, overall performance was superior with the CE solution (Figure 2).

**A farm's NE control strategy could benefit from a CE solution in addition to strict on-farm hygiene management practices to keep pathogens at bay.**



**Figure 2**

Effect of the different treatments on broiler performance day 1-42 (Entries with different letters are significantly different ( $p=0.009$ )).



## Watch high-performing cows for early signs of heat stress

1 Kadzere CT et al, 2002. Heat stress in lactating cows: a review. *Livestock Prod. Sci.* 77 59-91.

2 West JW. 2003. Effect of heat stress on production in cattle. *J. Dairy Sci.* 86 2131-2144.

3 Zimbleman RB and Collier RJ. April 2011. Feeding strategies for high producing dairy cows during periods of elevated heat stress. *Tri-State Dairy Nutrition Conference, Fort Wayne, IN.* Pages 111-126

4 Zimbleman RB. 2008. Management strategies to reduce effects of thermal stress on lactating dairy cattle. *University of Arizona Ph.D. thesis.*

**Today's high-performing dairy cows produce more than milk – they also generate a lot of heat.**

"Modern dairy cows generate their own metabolic heat," says Tony Hall, MSc MSB, PAS, Technical Services – Ruminant, Lallemand Animal Nutrition. "Cows that are already hot will feel the effects of heat stress earlier, and — when cows are under heat stress — they tend to eat less, ruminate less and produce less milk."

Cows have several responses to heat stress, including increased sweating and respiratory rates. A higher respiration rate can compromise the bicarbonate content of the saliva and even shift the acid-to-base chemistry of a cow's blood. This increase in nutrient requirements is one of the many reasons milk production is reduced in the face of heat stress.<sup>1,2</sup>

### ■ Recognising heat stress

Losses from heat stress can start when the Temperature-Humidity Index (THI) is above 68 for a majority of the day.<sup>3</sup> THI is a single value representing the combination of air temperature and humidity associated with the level of thermal stress. THI can be used to quantify the risk, and ultimately the production losses, associated with heat-stressed dairy cows.

"It's not always convenient to measure heat stress without disturbing the cows, and it's impractical to take every cow's temperature each day," Hall says. "The easiest way is to tell if cows are under heat stress is to observe their respiration rate, which is closely related to the THI."

Research shows once a cow's respiration rate gets above 60 breaths per minute, the THI is above 68.<sup>4</sup>

### ■ Making changes

Once heat stress is identified, steps can be taken at the farm level. First, producers should

make sure clean, fresh water is readily available and accessible. At least three inches of trough space per lactating cow is recommended. Then, feed twice daily to help maximise intakes. Ideally more of the total mixed ration (TMR) should be offered at the coolest part of the day — around 8 p.m. to 8 a.m. Also ensure the forage component cannot be sorted out and perform regular push-ups to encourage access and feed intake, Hall advises.

"We all know the right ration plays a big part in good productivity, but it's even more important to pay careful attention during times of stress when cattle just feel like sitting in the shade," he says. "A common problem I see is trying to incorporate unstable silage into the ration. It can cause the entire TMR to heat, and hot cows simply don't want to eat hot feed in the summer."

Always discard mouldy silage and feed out at a rate fast enough to avoid heating. In addition, always select the most digestible forages and strive to maximise inclusion of forage neutral detergent fibre (NDF) within the appetite limit of each pen for lactating cows. Check the particle size distribution profile using a Penn State Forage Particle Separator to confirm the distribution is within guidelines.

One simple change is adding an active dry yeast (ADY) probiotic — like Levucell SC, or *Saccharomyces cerevisiae* CNCM I-1077 — which can improve rumen function and increase fibre digestion in lactating dairy cows. Probiotics are especially helpful for producers experiencing health challenges as a result of heat or other stressors, Hall recommends.

"When heat stress occurs, normal rumen digestion and function is disrupted. This worsens the already significant effects of heat stress in dairy cattle," Hall says.

"We can't change the temperature or humidity, but we can help protect the productivity of our herds."



Image courtesy of Alan Judd

## Ensiling alternate forage crops in tough conditions

### L.HILGARDII CNCM I-4785

*Lactobacillus hilgardii* 4785 was isolated by scientists at the University of Lavras, Brazil, who observed the remarkable aerobic stability of local sugarcane silages.

More than 125 different strains of *L. hilgardii* were identified and tested before 4785 was identified as providing the most consistent response.

*L. hilgardii* CNCM I-4785 is recognised as a unique strain by the Pasteur Institute.

**Extreme feed shortages over the past three years means Australian dairy and beef producers have been forced to experiment with a range of non-traditional sources for silage.**

Lallemand Technical Services Manager, David Lewis, says Lallemand has helped livestock producers to successfully produce silage using sorghum stubble, corn stubble, sugar cane, canola, beans and even cotton!

"Ironically, hard times often drive innovation and that's certainly been the case in the silage sector over the past few years," he says.

"Livestock producers have been forced to use whatever fodder sources are available and we've seen a number of different crops successfully made into silage.

"Some of these crops have been difficult to compact and ferment or were contaminated with dust or high loads of undesirable bacteria but we showed that it is possible to make silage from these alternative sources.

"Like all silage, it comes down to good planning and management and the use of the best technology available."

David says sugarcane has been used successfully in feeding systems in Queensland and northern NSW a numbers of times over recent years.

"Sugarcane has some attributes that make it an alternative as a fodder source, particularly in terms of sugar content and yield," he says.

"It is a high-yielding crop that can produce up to 40 tonnes of dry matter (DM) per hectare – much more than most other tropical grasses.

"With good management, sugarcane is capable of producing a medium quality silage that has about 8 MJ/kg energy and 65% digestibility.

"That said and done, it won't provide a balanced feed for ruminants on its own due to its high levels of fibre, moderate energy and low protein.

"Furthermore, it is very perishable whether it is

fed fresh or ensiled and will start to deteriorate immediately it's harvested in the presence of air or spoilage organisms."

For best results, David recommends that sugarcane be harvested when the crop has a dry matter content of 30–33% and a sugar level of 18–22° Brix.

"Cane should be processed to produce a chop length of 10–15 mm, treated with a quality inoculant and then transported to a silage pit/bunker as quickly as possible," he says.

"It should be compacted to a density of 750 kg/cubic metre fresh basis and sealed with high quality, oxygen barrier film for at least seven weeks, although this is not always possible if feed supply is tight.

In addition, livestock producers should make sure they obtain a statutory declaration from the grower or have the sugarcane tested for pesticide residues before harvesting.

David says it is essential to use the correct inoculant when ensiling sugarcane to prevent the fermentation of ethanol.

"The high proportion of soluble sugars and wild yeasts means sugarcane is prone to alcoholic fermentation," he says.

"While this might sound appealing, the production of ethanol significantly reduces the silage's nutritive value and can result in large dry matter losses.

"It is vital that sucrose is converted into glucose, not ethanol."

"Even with good management, dry matter losses of 10 to 15 percent can be expected."

Heterofermentative lactic acid bacteria, such as *Lactobacillus buchneri* 40788 and *Lactobacillus hilgardii* 4785, will help improve aerobic stability in sugarcane silages.

Lallemand Animal Nutrition is Australia's leading supplier of silage technology and technical support when it comes to developing and understanding forage based feeding systems, silage inoculants, sealing systems and associated technologies.

## Stable rumen, stable productivity

1. Jewell, K. A. et al. (2015). *Ruminal bacterial community composition in dairy cows is dynamic over the course of two lactations and correlates with feed efficiency*. *Applied and Environmental Microbiology*, 81(14):4697-4710.

2. Clemmons, B. A. et al. (2019). *Temporal stability of the ruminal communities in beef steers*. *Nature Scientific Reports* 9 (Article 9522).

3. Novotny, D. and Marley, G. (2019). *Heterogeneity of corn silage across the face of the bunker and through the bunker*. *Proceedings of International Silage Forage Conference, Brno, August 2019*.

**Maintaining a stable rumen environment by minimising feed variability is a critical component of optimising the health, performance and profitability of any livestock enterprise.**

It is well-known that different species of rumen bacteria are associated with high (or low) milk production efficiency.<sup>1</sup>

Therefore, any change to the ration cannot only potentially alter the rumen microbial population but significantly impact milk production efficiency.

This potential impact becomes even more significant when it is considered that it can take up to nine weeks for the rumen microbial population to stabilise after a major change in diet.<sup>2</sup>

Silage represents a significant component of the ration in many herds, highlighting the importance of taking whatever steps possible to minimise variability.

Silage from the top metre of the bunker usually has lower nutritional value than silage from lower levels due to the reduced packing density and the permeation of oxygen through plastic sheeting.

A paper presented at the 2019 International Silage Forage Conference has confirmed silage quality can vary markedly according to its place in the bunker.<sup>3</sup>

In this study, silage was prepared in accordance with best management practices, including the use of plastic sealing and the use of a specialist silage cutter during feeding out.

This study showed there was a 10% difference in dry matter (30 vs 40%) and starch (24% vs 19.3–26%) between silage from the top and bottom levels, respectively.

The same trends were seen in starch levels when the bunker was re-sampled six weeks later (23 vs 26.7%).

In a ration containing 80% silage, these

variations mean the amount of starch delivered to each cow can vary between 3.9 and 5.2 kg/day, while dry matter intake can vary by up to 2 kg/day.

Depending on how the ration is formulated, these variations can easily create an unstable rumen environment and/or induce sub-acute rumen acidosis, which in turn, can negatively impact milk production and reproductive performance.

There are some simple steps that can be taken to minimise variation in silage quality:

1. Use effective sealing systems to minimise the penetration of oxygen into the upper layer. One study found the use of standard plastic sheeting reduced milk production by 116 kg per tonne of corn silage fed in the top metre of the bunker. By comparison, the use of oxygen barrier plastic reduced this loss to 36 kg per tonne.<sup>3</sup>
2. Use a specialist silage cutter (as opposed to a fork or grab) and cut across the entire face of the bunker during feeding out to help maintain the aerobic stability of the silage.
3. Take regular samples (at least monthly) to determine the nutritional value of the silage and adjust the ration accordingly.

Correct sampling technique is important.

Draw an imaginary 'W' across the clean, fresh face of the silage pit and take 10–12 samples along this line.

Mix the cores samples together to create a homogenised sample.

Place in a clean plastic bag and expel as much air as possible.

Take samples early in the week to ensure fresh silage is received and analysed by the testing laboratory.

Lallemand Animal Nutrition is Australia's leading supplier of silage inoculants, sealing systems and technical support for the production of quality silage.

## THE NEW BIOSECURITY PARADIGM:

✦ ✦ ✦ 1. CLEANING

🧴 2. DISINFECTION

✓ 3. POSITIVE BIOFILM APPLICATION

# Positive biofilms: Beneficial microorganisms for buildings

Nature abhors a vacuum. This adage is particularly true when it comes to microbial ecosystems. When looking at the hygiene management of farm buildings, we have to keep in mind that following cleaning and disinfection, surfaces do not remain sterile for long! This is when a positive biofilm approach begins to make sense. The idea is to apply selected beneficial bacteria to the building surfaces just after disinfection. By rapidly establishing a positive biofilm in the cycle, it will leave less room for the undesirable microorganisms to grow (cf. figure 1).

### ■ Successful applications in piglets...

A trial in farrowing rooms (Italy, 2017), shows that a positive biofilm is promoted on the building surfaces compared to disinfection alone when positive biofilm product LALFILM PRO is sprayed on the walls and floors following cleaning and disinfection. Positive *Pediococcus* spp. populations were higher while the development of negative microorganisms (*Staphylococcus* spp. and *Streptococcus* spp.) were limited. Another trial was carried out in piglets (France, 2017) with three consecutive batches of 2,318 piglets in a commercial farm. Again, the application of LALFILM PRO showed the

formation of a positive microbial environment in the building, leading to a reduced development of undesirable bacteria in the animal environment (streptococci, coliforms), thanks to the biophysical barrier created by the positive biofilm.

### ■ ... and poultry

In a trial conducted in a broiler barn (France, 2017), the application of LALFILM PRO showed the implementation of a positive microbial environment (*Bacillus* spp. and lactic acid bacteria). As a result, broiler performance was improved, including: growth performance, homogeneity of light chicks, mortality and culling rates.

Farm biosecurity measures — including cleaning, disinfection and application of sanitary breaks — impact the level of infection pressure before new animals enter the barn. Integrating a positive biofilm approach is shown to be an effective tool to complement these measures. It helps install a positive biofilm after the disinfection step and during the batch, which helps maintain a safe microbial environment within the farm for safer production conditions.



**Figure 1**

Following cleaning and disinfection, the application of a positive biofilm solution helps prevent the recolonisation of building surfaces by undesirable bacteria.

## Using corn silage for backgrounding beef cattle

**The provision of quality corn silage and optimising cattle rumen function can maximise livestock performance during the background phase.**

Toowoomba-based Technical Services Manager, Jordan Minniecon, says backgrounding is a proven method of transitioning grassfed cattle to a high energy ration.

"Young cattle are typically introduced to grain, hay and straw in preparation for the finishing," he says.

"However, corn silage is often favoured as a part of a background ration.

"As with any feeding program, the provision of quality fodder will pay dividends in terms of livestock health and performance.

"Producing and feeding silage is a significant task – there is little room for skimping.

"The most important objective is to reduce exposure to oxygen, which is the enemy of silage in all aspects of silage making and feeding.

"Oxygen can slow down the ensiling fermentation and allow spoilage organisms to grow.

"This can result in lost dry matter and nutrients and significantly impact livestock health and performance."

Strain-specific inoculants, which contain *L. buchenri* 40788 and the newly-discovered and patented *Lactobacillus hilgardii* CNCM I-4785, can ensure a fast, efficient fermentation and aerobic stability throughout storage and feeding out, minimising dry matter loss and spoilage.

Corn silage becomes more digestible as storage time increases.

Long-term storage gives the ensiling process time to break down proteins in the kernel that form a matrix with starch.

"If possible, keep forages ensiled for a

minimum of five months to allow the natural ensiling process to improve starch digestibility," Jordan says.

"Spoiled silage can sometimes be noticed on the top and sides of the bunker after opening.

"It is important to avoid the temptation to feed this spoiled silage – even in small amounts.

"It is best to use Silostop oxygen barrier film to avoid any risk of air entry and spoiled silage right from the start.

"The ingestion of even small amounts of spoiled silage can disrupt normal rumen function and can lead to reduced feed intake, digestibility and decreased production."

Jordan also recommends that background cattle are supplied a microbial feed additive to optimise rumen function as energy intake increases.

"An efficient rumen is the foundation for healthy, productive cattle," he says.

"The rumen microbial population digests and ferments 70 to 80 percent of the animal's feed.

"Without these microbes, cattle cannot digest fibrous feeds, especially forages.

"Helping stabilise the rumen environment can lead to more consistent and efficient production benefits.

"Probiotics are one way producers can achieve these results."

A study conducted at Kansas State University found the inclusion of an active dry yeast probiotic containing *Saccharomyces cerevisiae* CNCM I-1077 (LEVUCCELL SC) to the mineral mix of cattle grazing wheat pasture improved average daily gain and more uniform mineral consumption.<sup>1</sup>

LEVUCCELL SC is the only strain-specific dry yeast that has an FDA-approved functionality claim for maintaining cellulolytic bacteria population in the rumen of animals fed greater than 50 percent concentrate.

"Put simply, this means specific probiotics in



starter and growing diets can help the rumen mature and optimise the organ's function," Jordan says.

"In some cases, producers have been able to use lower-quality forage and achieve improved performance by making nutrients more available to the animal.

"This is particularly important for producers grazing cattle on late-season forages, which can have fewer nutrients."

#### Six tips for improving silage quality

1. Prepare machinery and storage facilities. Machinery should be serviced before harvest to avoid delays and bottlenecks. Bunkers should be cleaned and repaired if needed.
2. Harvest at the right maturity and moisture level. Harvesting at the best stage of maturity and achieving proper dry matter content for the specific forage helps maximise nutrients and/or DM preservation and feed intake by the animal.
3. Check chop length. Chop length affects ensiling characteristics and feed

quality. A short chop facilitates packing, minimising air infiltration. A longer chop length increases effective fibre in the diet, however care is needed not to compromise packing and fermentation.

4. Use scientifically-proven inoculants to drive efficient fermentation and aerobic stability. Inoculants that feature *L. buchenri* 40788 and *Lactobacillus hilgardii* CNCM I-4785 can ensure a fast, efficient fermentation and aerobic stability throughout storage and feeding out, minimising dry matter loss and spoilage.
5. Pack well. Achieving target packing densities is vital and requires adequate

packing weight, time and technique.

6. Seal fast and tight. Fully covering and sealing will help ensure a good fermentation, minimise nutrient and dry matter losses, maximise feed quality and increase production from the forage base. Silostop oxygen barrier film has been available for more than 10 years and is now regarded as the industry standard for stopping air entry into silage.

<sup>1</sup>Mineral intake in 261 grazing steers, Levucell SC in Grazing Steers, Kansas State University.



## TECHNICAL SERVICES TEAM



Jordan Minniecon  
0428 027 266



Nathan Lister  
0438 190 388



David Lewis  
0427 715 939



Kurt Stein  
0427 715 001



Katrina Hubeek  
0436 344 712



## You're invited: Warwick Boxing Day races to remember Trevor Schoorl

The family and many friends of well-known silage and nutrition consultant, Trevor Schoorl, hope silage and livestock producers and contractors from south-eastern Queensland will join them at this year's Warwick Turf Club Boxing Day races to celebrate his memory.

A much-loved and missed industry figure, Trevor was tragically killed over the Christmas break last year.

Two of Trevor's long-standing colleagues, Stuart Judd and Cliff Shelley, have joined forces to create the Trevor Schoorl Memorial Cup, which will be a highlight of the seven-race program.

Stuart and Helen Judd operate silage contracting, fodder production, transport and rural supplies businesses in Warwick, while Cliff and Donna Shelley operate dairying, feedlot and transport businesses at Freestone.

"Cliffy and I have worked together in silage and transport for more than 25 years and we've known Trevor ever since he returned from the Dominican Republic," Stuart says.

"We've been sponsoring the Boxing Day race meeting for the last couple of years, primarily as a bit of a Christmas party for both our businesses – it's the only time we can get all of our staff, friends and family together.

"It's the highlight of the Warwick calendar

because everyone is home for Christmas.

"Last year, Trev and Genevieve Schoorl joined us at the races and everyone had a great day.

"If Trev said once how much he was enjoying the day, he would have said it a hundred times before dark.

"His last words to me were, 'Book me in for next year', so Cliffy and I decided to make good on that promise."

The Trevor Schoorl Memorial Cup will be presented to the winner of Race 3, a 1500 m handicap that boasts \$21,000 prize money.

"Gen is right behind it and is going to present the trophy," Stuart says.

"She told us that she wanted to do something to remember Trevor and thank everyone for their support, and Cliffy and I said, 'Well, here's what we would like to do'.

"We're hoping that everyone who knew Trevor will attend.

"It's going to be a nice day and a great way to celebrate his memory."

Trevor Schoorl was a highly-respected figure in the dairy, feedlot and forage contracting industries throughout Australia.

His honesty, accountability, humility and hard-working nature earned him the respect of his many clients and colleagues throughout the world.

MAYDAN LIVESTOCK TRANSPORT/FREESTONE FEEDLOT

# BOXING DAY RACES

BEACH PARTY

THURSDAY, DECEMBER 26

COME DRESSED IN YOUR FAVOURITE HAWAIIAN SHIRT FOR A FUN FILLED RACE DAY

**GATES OPEN 11AM**

- JUMPING CASTLE FOR KIDS
- MECHANICAL SURFBOARD RIDE FOR ADULTS - PRIZES TO WIN!
- COCKTAILS AT THE TIKI BAR
- BEACH VOLLEYBALL COMP
- ENTERTAINMENT BY DJ BIG DAWG TIL LATE

PROUDLY SUPPORTED BY

Stade's Daily News HYNES We R Silage CANBUILD

www.warwickturfclub.org.au • 170 Victoria Street, Warwick

### IN THE MIX

In The Mix is published 3 times a year by Lallemand Animal Nutrition.

To subscribe, visit  
<http://lallemandanimalnutrition.com/en/australia/knowledge-center/in-the-mix/>

For more information on any product or service featured, call (07) 5451 0125.

### FOLLOW US ON SOCIAL MEDIA

