



SPECIFIC
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IN THE

MIX #53



Maintain performance during heat stress

Page 4

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IN THE MIX #53 SUMMER 2020

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DID YOU KNOW?

How do scientists study microbial communities?

From petri dish to metagenomics

When scientists understood the importance of microbes, they started to design techniques to study them in the lab. They used microscopy to study their physical forms and culture techniques to categorise them.

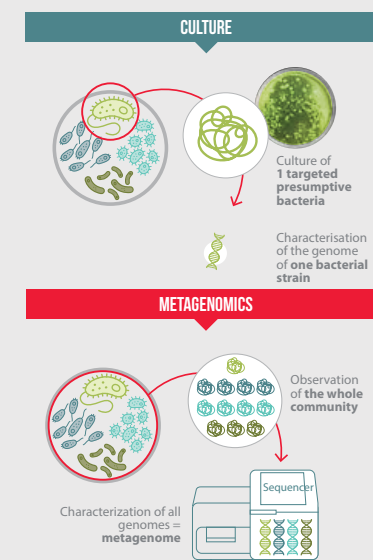
These traditional techniques have taught us a lot and are still used today, but they provide a very limited vision of the microbial world. Recently, thanks to the advances of high-throughput DNA sequencing, microbiologists have made a giant leap: metagenomics!

Today, cultural and metagenomics approaches are complementary. What characterises metagenomics techniques:

- They allow scientists to detect rare bacteria species and ones that cannot be cultivated
- They enable the analysis of a large number of microbial samples at the same time
- They give us a snapshot of population diversity within a sample

These techniques require a very specific expertise in biostatistics and important bioinformatics resources to translate the millions of DNA sequences into microbial population composition. They also rely on a specific database of known bacteria sequences, while a large proportion are still unknown.

The rapid and substantial cost reduction in next-generation sequencing has dramatically accelerated the development of sequence-based metagenomics.



¹ Metagenomics applies a suite of genomic technologies and bioinformatics tools to directly access the genetic content of entire communities of microorganisms. (Thomas et al., 2012)

Meeka Wood joins the team



Lallemand Animal Nutrition is excited to welcome Tamika (Meeka) Wood to the team. Based in the Maroochydore office, as the customer service officer, Meeka will be a friendly voice on the other end of the telephone and will be the first point of call for customer inquiries, orders and dispatches.

Meeka has a keen interest in animals and has worked in the past on a cattle station and as a Vet Nurse.

The Lallemand team welcomes Meeka and look forward to the insights and energy she will bring to the team.

FAMI-QS Certified

Lallemand Animal Nutrition Australia is FAMI-QS certified.

FAMI-QS is the Quality and Safety System for Specialty Feed Ingredients and their Mixtures.

The FAMI-QS Code addresses feed safety, quality, integrity (fraud), defence and regulatory compliance of specialty feed ingredients and their mixtures by:

- minimising the risk that unsafe specialty feed ingredients and their mixtures enter the feed and food chain
- increasing transparency towards your clients & other stakeholders
- effective control of internal processes, minimising risk of failure
- increased staff motivation by focusing on a job well done
- proactive approach to feed safety & quality.

The FAMI-QS code is designed for international validity; thus, participants in FAMI-QS can be found all over the world.

As the international feed market becomes increasingly regulated, these new certifications represent a significant accomplishment demonstrating the commitment of Lallemand in offering its customers the highest quality standards.

Lallemand is excited to part of this global system which reinforces to our customers that our products are produced with highest safety standards in mind.

FAMI-QS and FIAAA have signed a strategic agreement of cooperation for the adoption of the FAMI-QS Code in the region of Australia-New Zealand. The process to migrate all the FIAAA members to the globally recognised FAMI-QS quality assurance system has started.

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 | ■ AFL | ■ Super rugby |
| 1. Ben Morgensen | 1. Wayne Thompson | 1. David Henman |
| 2. Wayne Thompson | 2. Jeff Dight | 2. Geoff Irish |
| 3. Geoff Irish | 3. Jason Amos | 3. Jeff Dight |

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



Live yeast helps maintain dairy cow performance during periods of heat stress

Ref: Bach A., C. Iglesias, M. Devant, and N. Ràfols. 2007. Daily rumen pH pattern of loose-housed dairy cattle as affected by feeding pattern and live yeast supplementation. *J. Anim. Feed Sci. Technol.* 136: 146-153

DeVries T. J. and Chevaux E.. 2014. Modification of the feeding behavior of dairy cows through live yeast supplementation. *J. Dairy Sci.* 97: 6499-6510

Fustini M., A. Palmonari, H. Durand, A. Formigoni, and E. Grilli. 2013. Effect of *Saccharomyces cerevisiae* CNCM I-1077 (LEVUCCELL SC) on rumen pH and milk production during heat stress. *J. Anim. Sci.* 91 (S2)/*J. Dairy Sci.* 96 (S1)

Perdomo, M.C. et al. 2020. Effects of feeding live yeast at 2 dosages on performance and feeding behavior of dairy cows under heat stress. *J. Dairy Sci.*, Vol. 103 (1) 325 – 339

A recent study published in the **Journal of Dairy Science** by the team of Professor José E.P. Santos from the University of Florida (Perdomo et al., 2020) indicates that the rumen specific yeast *Saccharomyces cerevisiae* CNCM I-1077 (LEVUCCELL SC) helps alleviate the negative effects of heat stress on feed efficiency in dairy cows. Researchers credit the positive effects on the ability of *S. cerevisiae* CNCM I-1077 to impact rumen pH and feeding behavior.

Heat stress impacts rumen function and feeding behavior

One of the many challenges of dairy production under hot and humid climates is decreased milk yields when cows are exposed to heat stress. Heat stress also represents challenges for the rumen, leading to increased risk of Sub Acute Ruminal Acidosis (SARA). The compilation of more than 500 rumen efficiency audits indicates that in farm settings across many regions and farming systems under heat stress conditions, 60% of farms present suboptimal rumen efficiency. Indicators linked to feeding behavior are affected by heat stress, in particular rumination activity.

Nutritional strategies to preserve dairy performance under heat stress should focus on supporting nutrient utilisation by optimising diet digestion while preserving rumen function. In this context, the rumen

specific yeast *S. cerevisiae* CNCM I-1077 — demonstrated to improve both nutrient digestion and rumen efficiency — has already been shown to effectively alleviate the toll of heat stress on dairy production and improve rumination behavior (Fustini et al, 2013). The recent study by Perdomo et al. (2020) further demonstrates the benefits of the live yeast on rumen fermentation profiles and feeding behavior, two parameters that are intimately linked. This is translated into better feed efficiency.

Improved rumen efficiency and feeding behavior under stressful conditions

The trial was conducted on lactating Holstein cows fed 40% corn silage, 10% alfalfa hay and concentrate, including 240g/head/day of sodium bicarbonate. The average daily temperature-humidity index (THI) during the trial was 81 and the lowest point was 75, which is still equivalent to high heat stress conditions.

The cows received either no supplement (Control) or *S. cerevisiae* CNCM I-1077 at the recommended dose for stressful conditions, 20X10⁹ CFU/cow/day (LEVUCCELL SC).

The live yeast supplement led to improved feeding behavior:

- Increased chewing activity (Figure 1)
- Improved rumination behavior with reduced time between rumination bouts

Effect of live yeast supplementation on

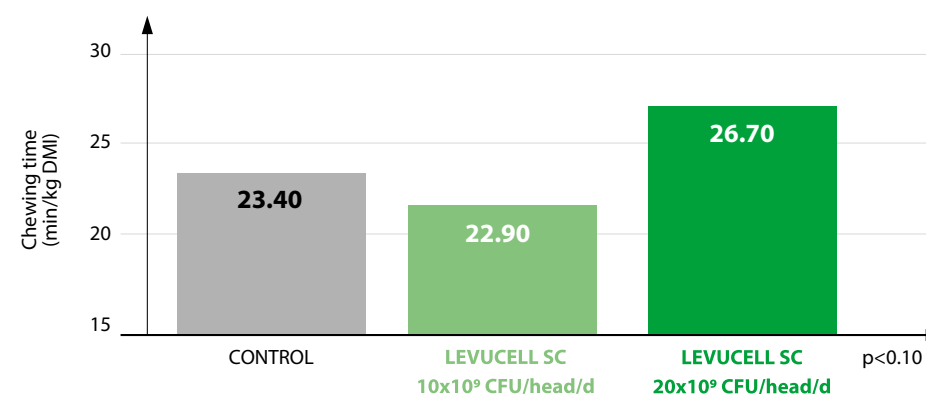


Figure 1

Effect of live yeast supplementation on dairy cows average chewing time ($P<0.10$) (adapted from Perdomo et al., 2020, results of one supplementation regimen among two different doses tested)



dairy cows average chewing time ($P<0.10$) (adapted from Perdomo et al., 2020, results of one supplementation regimen among two different doses tested)

Overall, the longer time spent chewing and ruminating had a positive impact on rumen function and helps maintain rumen health.

Chewing and ruminating can contribute to increased saliva production, hence the higher buffer effect, as translated into improved rumen pH (+0.34 pH units on average with the live yeast) and reduced risks of SARA (Figure 2).

This is also confirmed by reduced levels of the inflammation biomarker in the blood, Amyloid A.

Higher feed efficiency under heat stress and a 5:1 ROI

As a result, dairy performance was improved with the supplementation of LEVUCCELL SC without impairing milk solids (no dilution effect):

- Feed efficiency is improved by 7.6% (+130g energy-corrected milk/Kg DMI) (Figure 3)
- Energy-corrected milk is improved by 2 Kg cow/day

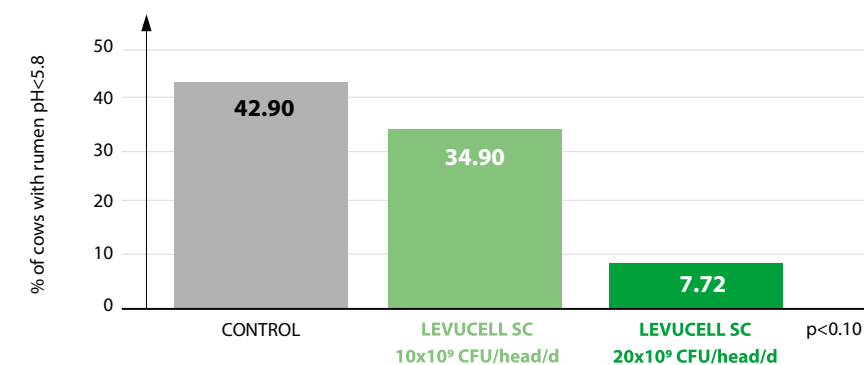


Figure 2

Effect of live yeast supplementation on the percentage of dairy cows with rumen pH below 5.8 (SARA risk) ($P<0.05$) (adapted from Perdomo et al., 2020, results of one supplementation regimen among two different doses tested)

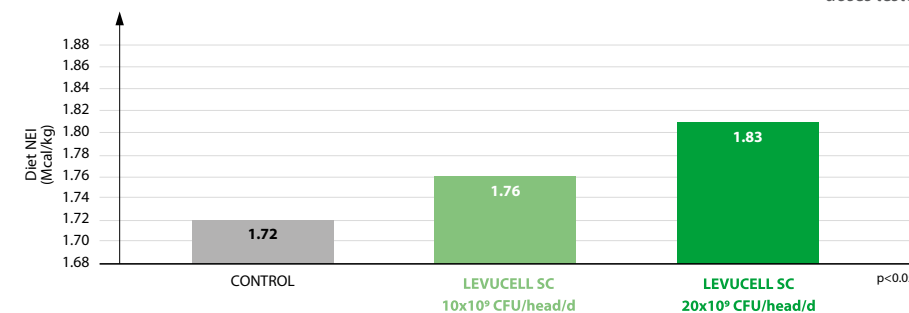


Figure 3

Effect of live yeast supplementation on dairy cow feed efficiency ($P<0.05$) (adapted from Perdomo et al., 2020, results of one supplementation regimen among two different doses tested)

TECHNICAL SERVICES TEAM



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Silage 'drought proofs' Bundaberg beef operation



The adoption of a large-scale silage production and feeding program is enabling Bundaberg district beef producers, Sandy and Jamie McCartney, to 'drought proof' their operation.

Frustrated by the impact of the ongoing drought, the McCartneys had more than 1500 tonnes of corn silage contract grown and harvested earlier this year and are now utilising the results in their early weaning and finishing program.

Silage enables green crops, including lucerne, cereals, corn, sorghum or cane, to be harvested at their optimum nutritional value and stored for extended periods, providing a cost-effective source of feed at other times of the year or as a drought management tool.

Operating in partnership with Sandy's father, John McCartney of Agnes Water, Sandy and Jamie run about 3500 high grade Brahman cattle across 12,000 hectares of owned and leased land around 'Bucca Station', 25 km north of Bundaberg.

The enterprise turns off about 1000 steers, surplus heifers and cull cows for the EU and MSA-graded domestic markets each year.

The McCartneys were forced to implement a radical early weaning and supplementary feeding program this year in response to the dry conditions.

"Our annual rainfall is meant to be about 45 inches but we haven't received that much in the past three years combined," Sandy says.

"Last year, we spent a small fortune on pellets for our weaners and molasses for our cows and had little to show for it, so I began to look at other feeding options."

He was quickly directed to Lallemand Animal Nutrition Technical Services Manager, Jordan Minniecon, to Tansey-based silage contractors, Allan and Cameron Anderson, and nutritionist, Iain Hannah.

Lallemand is Australia's leading supplier of silage technology and technical support, including forage inoculants, sealing systems and associated technologies.

"The Andersons helped me every step of the way from planting through to harvesting and storage; Jordan was a big help with designing the pits and yards, and sealing systems; while Ian has been instrumental in setting up our feeding program," Sandy says.

Sandy arranged to have two crops of corn totalling 49 ha grown in the Bundaberg district.

In the meantime, he engaged an earthmoving contractor to construct two silage pits totalling 1000 tonnes, as well as a gravel pad for a 1500 tonne above-ground 'bun stack'.

"Our goal is to use the pits as our long-term drought reserves and use the stack as part of our feeding program every year," Sandy says.

"All up, we have spent about \$200,000 on earthworks and the purchase of a loader, tractor and mixer wagon but this will pay for itself in three or four years.

"If we didn't have the silage, we'd have nothing to feed our weaners and nothing to finish our steers and surplus heifers."

The first crop was harvested in May, transported to 'Bucca Station', and placed into the two pits.

The second crop, harvested in August, was stored as a bun stack.

Both crops were treated with a new forage inoculant called MAGNIVA PLATINUM (see panel) during the harvesting process.

After packing, the two pits and bun stack were sealed with an inner layer of Silostop Max 'oxygen barrier' film and then an outer layer of SilageKeeper UV covers.

Silostop Max is an 80 micron multi-layer film that prevents oxygen from entering the silage, making it ideal for long-term storage. SilageKeeper is a thick outer cover that protects the oxygen barrier film against UV light and damage caused by animals and environment, as well as providing an additional protective layer.

"The extra cost of using a premium inoculant and quality covers is not a lot of money in the scheme of things," Sandy says.

"You don't buy an expensive car and leave it outside in the weather."

Sandy opened the bun stack in June for use in his early weaning and finishing programs.

"We used to wean our calves at about 180 to 220 kg and then feed them weaner pellets and quality hay for a couple of weeks," he says.

"The pellets were extremely expensive due to transport costs and we found the weaners tended to get fat instead of grow.

"This January, we weaned our calves at about two months of age or 80 kg liveweight and then fed them crumble for three months and then silage in the yards until they got to 260 kg.

"It has been a real eye-opener for us.

"Silage is a far cheaper way to feed weaners and it really gets their rumens going.

"The silage is working out to be about \$5.20 a week but they are putting on more than a kilo a day."

Weaners are supplementary fed 8.5 kg/day of silage, together with a vitamin and mineral premix and corn gluten meal to provide an additional source of protein and starch, via paddock troughs.

Finishers are fed 35 kg/day of the same feed mix, along with MU8 (molasses plus 8% urea), in the pens.

"Having 2500 tonnes of silage stored away means I will always have something to sell and a guaranteed cash flow every year," Sandy says.

"It's like having another property except you don't have to worry about fences, rates or the bank manager!

"Land costs around here costs about \$9000 to \$10,000 per beast area and there's no guarantee it's going to rain.

"If the season goes dry, I can still put 200 or 300 head of cattle in the pens and have them finished within 60 days.

"If the season improves, I can always reseal the pit for another day."

Lallemand Animal Nutrition Technical Services Manager, Jordan Minniecon, says it is very satisfying to see customers enjoying the benefits of silage, future proofing their operation and making more money from home grown forage.

"It's a highlight of my job."

New generation inoculant

MAGNIVA Platinum combines two bacterial strains for faster 'front end' fermentation and improved 'back end' aerobic stability than either strain alone.

Developed by Lallemand in conjunction with leading agricultural research institutions throughout the world, it allows silage pits and stacks to be safely opened earlier and remain open for longer.

MAGNIVA Platinum combines two strain-specific bacteria: *Lactobacillus hilgardii* CNCM I-4785, first new bacterial strain approved for use in forage inoculants for more than 20 years, and *L. buchneri* NCIMB 40788, the current industry benchmark.

Scientific trials have shown forage inoculated with MAGNIVA Platinum can be safely

opened after just 15 days, if necessary.

It also protects the silage from spoilage while the stack is open, reducing wastage.

Lallemand Animal Nutrition Technical Services Manager, Jordan Minniecon, says the inoculant rapidly produces a number of antifungal compounds that reduce the population of yeasts and moulds that cause heating in silage.

"Heat is a major issue when making silage," he says.

"Heat represents a loss of energy, reducing the nutritional value of the silage, palatability and feed intake.

"The other important factor is wastage, which reduces the amount of feed that can be made available to livestock for production.

"Reducing spoilage has another important benefit in protecting rumen health and reducing mycotoxins.

"The bottom line is that producers can deliver more and better quality silage to livestock, which has important flow-on benefits in terms of production and profitability."

MAGNIVA Platinum also contains specific enzymes to drive optimal fermentation in all conditions and incorporates Lallemand's patented 'high concentration' technology.

"This technology keeps a high concentration of viable bacteria in a stable suspension for up to 24 hours, ensuring even application to the crop throughout the day and a longer tank life in solution," Jordan says.

"It is especially suitable for ultra-low volume application systems as there is less risk of clogged pumps."

Microbial management of bedding and manure

Good nutrition, good health and a clean environment are the three pillars to profitable livestock production. Lallemand Animal Nutrition can now offer scientifically-proven solutions to optimise and balance these three integrated and complex ecosystems.

Strain-specific silage inoculants improve control of forage fermentation and preservation, thereby reducing spoilage and improving nutritional quality and safety. Strain-specific probiotics can positively impact digestive microflora, helping to improve digestion, health and performance.

Lallemand Animal Nutrition can now provide a scientifically-proven solution to assist in maintaining a healthy environment for livestock. Animal bedding, manure and slurry harbour important microbial populations. Optimising the balance of these populations helps to maintain a safe environment for the animal, reduce odours and maximise the agronomic value of organic waste.

MANURE PRO is a highly concentrated combination of carefully-selected cellulolytic enzymes, live lactic acid bacteria and *Bacillus* strains that positively influences fermentation in animal bedding, manure and slurry.

In combination, they help to manage the presence of bacteria that are potentially harmful for animals (and humans) or are responsible for the production of ammonia and other odours. In addition, they help to improve nitrogen retention and consistency of organic waste.

The cellulolytic enzymes release fermentable sugars from lignocellulosic materials in bedding, such as straw or woodchips, or organic waste. Lactic acid bacteria and *Bacillus* then use these sugars as nutrients, allowing them to proliferate and positively influence the fermentation process within the bedding or manure.

The selected strains of lactic acid bacteria are widely used in human and animal nutrition to ferment milk into yogurt or cheese or to preserve forages into silage. They are recognised as posing no risk to livestock, humans or the environment.

They transform simple sugars into lactic acid, which decreases the surrounding pH and creates an unfavourable environment for undesirable microorganisms, including certain bacteria that are responsible for ammonia emissions.

Several strains of *Pediococcus* were selected from the Lallemand bacteria culture collection. *Pediococcus* show superior osmotolerance, which ensures better survival under different conditions and, more specifically, in the presence of high concentrations of organic molecules, such as in manure or slurry.

MANURE PRO also includes a strain of *Bacillus amyloliquefaciens*. *Bacilli* species are used extensively in agriculture as probiotics, plant growth promoters or for bioremediation. Several bacilli species, including *B. amyloliquefaciens*, help to remove odours, such as ammonia or sulphur dihydrogen, from slurry. *B. amyloliquefaciens* forms a biofilm on treated surfaces and produces several extracellular enzymes, including α -amylases, cellulase and proteases.

MANURE PRO is a water dispersible powder that, once diluted, is sprayed on bedding areas, manure heaps and slurry pits. Alternatively, it can be included in bedding conditioners, such as absorbents.

The role of fibre in silage and animal nutrition

Increasing intakes of high-quality silage are crucial to driving on-farm profitability, but to achieve this, producers must understand the role of fibre. Fibre plays a vital function in milk production and the utilisation of silages, influencing rumen function and regulating total dry matter intakes.

Producers should plan to produce forages with high levels of digestible fibre. When silages are analysed, the fibre fraction is usually described as Neutral Detergent Fibre (NDF) and lignin. Some more modern analyses report digestible NDF (NDFd), which is a better indicator of the digestibility and therefore the value of the fiber. The analysis may also include ADF (Acid Detergent Fibre) which is a measurement of the indigestible fibre found in silage, as the value increases NDFd will decrease as will the energy content of the silage.

Balancing Fibre

Fiber digestibility is crucial as it affects the rate of fermentation in the rumen, the rate of rumen passage and ultimately dry matter intakes. More digestible fibre will be fermented faster in the rumen, stimulating higher intakes. Indigestible fibre sits in the rumen and can depress appetite. Just as with any feed ration, a balance is required. Although fibre needs to maximise NDFd, it needs to be balanced with

levels of undigested fibre to increase dry matter intakes and feed efficiency. For example, young grazed grass is very high in NDFd and contains little undigested fibre so passes through the rumen quickly, increasing dry matter intakes. At the other extreme, high straw diets for dry cows are more lignified and contain a much higher level of undigested NDF, passing more slowly through the rumen and reducing dry matter intakes but maintaining a higher rumen fill.

Another factor to take into account to maximise rumen health is the effectiveness of that fibre at forming a rumen mat to stimulate rumination. Optimising rumination is essential to maintain high production levels and a healthy rumen environment. Physically effective Neutral Detergent Fibre (peNDF) is the proportion of fibre that stimulates cudging and the formation of a functional rumen mat. It can be measured in most diets by sieving with a Penn State separator.

Where lignin is high in a silage, the rumen will need to be supplemented with the optimum level of rapidly fermentable energy sources. These can increase the risk of acidosis, so need to be balanced carefully. By understanding fibre better, producers maximise the contribution from silage. For more information optimising fiber in silage, please contact one of our silage experts..

Want to take control of your silage quality?

www.QUALITYSILAGE.com

Using probiotics to manage poultry feed costs

Ref: Demey, V., Chevaux, E., Barbé, F., 2018. A multi-analysis evaluating the effect of *Pediococcus acidilactici* MA18/5M on performances of broiler chickens and laying hens. XVth European Poultry Congress, Dubrovnik, 17-21 Sept 2018

Mikulski, D., Jankowski, J., Mikulska, M., Demey, V. 2020. Effects of dietary probiotic (*Pediococcus acidilactici*) supplementation on productive performance, egg quality, and body composition in laying hens fed diets varying in energy density. *Poult.Sci.*, 99, 2275-2285

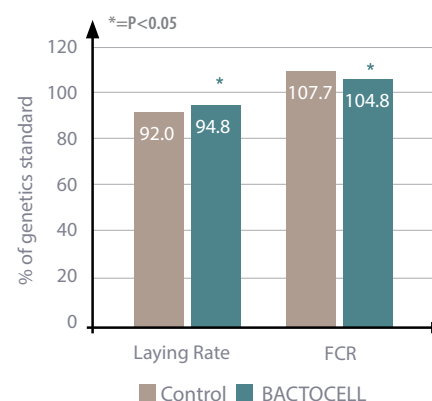


Figure 2

Effect of *P. acidilactici* CNCM I-4622 supplementation on performance of layers (% of genetic standards) according to a 24-trial multi-analysis (Demey et al., 2018).

Table 1

Effects of dietary energy with and without probiotic on laying performance

Diet	Lay Rate	FCR	Exported Egg Mass
2650 Diet	96.25	1.982	1.693
2650 Diet + Probiotic	96.86	1.958	1.724
2550 Diet	96.28	2.043	1.656
2550 Diet + Probiotic	97.42	1.975	1.688
SEM	0.446	0.018	0.015
P-Value	0.550	0.220	0.997

Energy is a major driver of feed costs in poultry production. Nutritionists formulate the diet depending on the potential laying capacity of the breed, the hen's age, the egg production target and the costs of available raw materials. It is estimated that, in poultry, 5 to 30% of the total energy requirement is provided by the gut microbiota. Recent findings confirm that BACTOCELL — *Pediococcus acidilactici* CNCM I-4622 (MA 18/5M) — represents an additional tool to manage ration costs for poultry production.

■ Energy compensation

Mikulski et al. (2020) conducted a study to determine the effect of *P. acidilactici* supplementation in diets with different energy levels on laying hen performance. Despite a 100 kcal ME/kg (0.4 MJ/kg) of feed difference (from 2650 to 2550 kcal/kg or 11.0 to 10.6 MJ/kg), the probiotic/low energy group displayed a similar laying rate, equivalent feed conversion rate, and exported egg mass than the control/standard energy group (Table 1). The researchers concluded that the probiotic was able to compensate for the effect of a 100 kcal ME/kg of feed energy dilution on the laying performance.

This research suggests the probiotic supplement exerts a positive influence on dietary energy utilisation.

The publication concluded that *P. acidilactici* CNCM I-4622 supplementation on a reduced-energy diet can be a viable strategy for lowering feed costs while maintaining laying performance and egg quality.

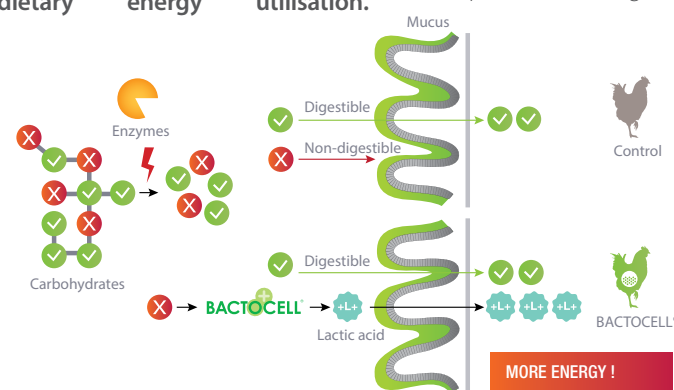
■ Improved performance

Moreover, it appears hens fed the probiotic diet have better performance than hens without the probiotic ($P < 0.05$) when comparing the effect of the probiotic with an equivalent diet at the same energy level. This is consistent with the scientific and field performance knowledge gathered during the last 20 years of *P. acidilactici* CNCM I-4622 usage in laying hens. Overall, there is a 3% increase in egg production and a 2.7% improvement in feed conversion (Figure 2) (Demey et al., 2018).

■ Feeding strategies

The new findings show *P. acidilactici* CNCM I-4622 brings egg producers another tool to manage ration costs by improving dietary energy utilisation. Laying hens will extract more energy from the feed. This gives nutritionists two options:

1. Use the probiotics on top of the formula to improve overall performance
2. Use *P. acidilactici* CNCM I-4622 to reduce the cost of energetic raw material (30-50 kcal/kg of feed depending on the performance targeted).



One of the mechanisms that can help explain the probiotic effect on dietary energy: complex carbohydrates are converted into digestible lactic acid by the probiotic, hence more energy is available in the gut.

Local research confirms the efficacy of Fermaid Ease



A scientific trial conducted at Charles Sturt University has confirmed the benefits of Fermaid Ease, a natural feed ingredient developed by Lallemand Animal Nutrition, in maintaining gastric comfort in intensively managed horses.

Gastric ulcers are a painful condition that can affect horse behaviour and performance. Nearly all horses develop gastric ulcers during training, with the incidence and severity worsening with increased work.

Intense exercise causes acidic stomach fluid to splash against the lining of the upper (squamous) region of the stomach, causing spot lesions or ulcers. While the lower (glandular) region of the stomach is naturally protected from inflammation, the squamous region is in a continual process of damage and repair.

A range of pharmaceutical drugs are available to prevent or treat gastric ulceration, but non-pharmaceutical methods are desirable.

Fermaid Ease is produced via the fermentation of soybean meal with a strain-specific lactic acid bacteria, *Lactobacillus delbrueckii* lactis Rosell 187. It helps maintain the integrity of the digestive tract by controlling gastric acid production and supporting cell regeneration.

Conducted by Professor Sharanne Raidal and Associate Professor Kris Hughes from CSU's School of Animal and Veterinary Sciences, the trial investigated the impact of Fermaid Ease on gastric ulcer scores.

Gastroscopy of 120 horses presented to the CSU Veterinary Clinical Centre or at local training establishments identified 60 horses with spontaneous gastric ulcer disease. Of these, 29 horses were allocated to a treatment (25 g daily) or placebo group for 30 days.

Gastric scores were assessed at Day 31, at which time horses started the reciprocal treatment. Eleven horses successfully completed both treatment periods.

Horses treated with Fermaid Ease showed a significant decrease in squamous ulcer scores in both periods. No change was observed in squamous ulcer scores for horses receiving the placebo treatment in Period 1, with increased scores observed in Period 2. No effects were observed on glandular ulcer scores in either group or period.

The publication of the article is a pleasing outcome for Lallemand Managing Director, Alex Turney, who spent nine years locating the researchers and encouraging them to write a scientific paper.

Check your silage regularly

With mice numbers on the rise, it's important to monitor your silage pits and bales regularly to check for any signs of damage.

Lallemand Animal Nutrition Technical Services Manager, Nathan Lister, says mice can cause extensive damage to silage by burrowing through plastic film or soil and allowing oxygen to enter silage.

"Any source of oxygen can start the aerobic spoilage process, destroying valuable feed," he says.

"Dead mice in the silage can also be a source of potentially-fatal Botulinum bacteria.

"It is important to keep the surrounding area of your silage pit or stack free of vegetation.

"Inspect your silage pits regularly and to patch any holes immediately.

"If necessary, implement a control program and don't hold back on the number of bait stations.

"Continue the baiting program for as long as necessary.

"If you go down the path of spraying herbicides around silage areas to reduce mouse habitat,

avoid getting any chemical spray or drift on to the silage plastic or covers as it can cause any plastic to degrade quicker."

For more information or assistance managing your silage, please contact your technical services manager or call the Lallemand Animal Nutrition office.



IN THE MIX

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