



**SPECIFIC
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IN THE **MIX** #55

SPRING 2021



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Beef Australia**



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#BE PASSIONATE BE LALLEMAND



▲ *The Lallemand Center of Excellence team*

Lallemand has established partnerships with research entities around the world to develop **the Lallemand Centers of Excellence**. The team has many OMICS and bioinformatics experts that dedicate their time to advance microbiota research, either in the animal gut, their feed (silage), or their environment (biofilms, aquaculture ponds, etc.). They study various factors influencing animals — and their associated microbial ecosystems — and decipher the functional relevance of those changes for the animal.

Welcome

Welcome to another packed edition of *In The Mix*. Despite the challenges of COVID on the urban communities the time for Rural Australia to shine is now, and shining it is. Like a beacon of light for the economy. Everything is firing, from protein prices, trade, the rain, and the property prices. The feeling in rural Australia seems as buoyant as its ever been. And records indicate this years winter is just a “good old fashioned one” in most parts. But what hides around the corner? Supply chain pressures and the prices of certain raw materials are increasing and both factors will impact our businesses. Be sure to get your planning on track from forage, to farm inputs for all sectors. Technology is gaining traction everywhere and we’re pleased to partner with SmaXtec Rumen Boluses to continue their deployment across Australian dairy farms. The uptake of the rumen specific live yeast, Levucell SC, continues at strong levels as producers look for natural solutions to improve rumen function, improve health and well being, and ultimately performance of livestock. Thanks to all our customers for your ongoing support, together we all succeed.

Alex Turney - Country Manager

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Scott Atkinson joins the **Lallemand** team



Lallemand Animal Nutrition is pleased to announce the appointment of Scott Atkinson as its new Technical Services Manager for Gippsland and Tasmania.

Raised on a sheep-beef property at Nicholson in East Gippsland, Scott has more than a

decade's experience in dairy nutrition via territory sales manager roles with two leading stockfeed suppliers.

This is backed by further decade's experience in various sales, business development and management roles in the fuel and lubricants industry.

Scott says he is delighted to be joining Lallemand Animal Nutrition.

"The key drivers of profitability in the Gippsland is the ability to grow more grass and to utilise more grass," he says.

"The production of quality home-grown fodder is the key to higher margins and profitability.

"Lallemand is a world leader in forage preservation and ruminant nutrition, so I look forward to this new role with a great team."

Scott also sees enormous potential for the adoption of Lallemand's range of strain-

specific yeast, bacteria and microbial derivatives used in livestock production.

"I am particularly excited about the potential of LEVUCCELL SC, which provides a natural and effective alternative to in-feed antibiotics," he says.

"Whereas antibiotics modify the microbial population in the rumen by eliminating undesirable microflora, LEVUCCELL SC is a probiotic that helps to create a stable rumen environment by proliferating the growth of desirable species.

"The beneficial effects of LEVUCCELL SC upon the health and performance of dairy and beef cattle have been described in more than 60 scientific papers published throughout the world.

"It is the only rumen modifier that is recognised as an allowable input by the EU and Australian Certified Organic."

Inaugural Trevor Schoorl Memorial **Scholars** announced



▲ Pictured is Liam Stienen (left) and Jesse Lanyon (right), winners of the Trevor Schoorl Memorial Scholarship.

Two University of Queensland – Gatton students, Liam Stienen and Jesse Lanyon, have been named as the winners of the inaugural Trevor Schoorl Memorial Scholarship.

The scholarships honour the memory of leading silage production and nutrition consultant, Trevor Schoorl, who tragically passed away in 2018.

The \$6500 scholarships provide young people studying agriculture or a related

discipline to further their knowledge of forage preservation, free-stall dairy production and dairy nutrition by working alongside some of Australia's best dairy and forage industry operators.

Liam Stienen is a fourth-year student in the Bachelor of Sustainable Agriculture (majoring in livestock and poultry production) / Bachelor of Agribusiness program at UQ – Gatton.

Liam has had a strong passion for the dairy industry, having spent extensive time working on his family's dairy farm in Germany over the past decade.

For the past three years, he has worked in the University of Queensland – Gatton research dairy and pig unit.

He has a particular passion for improving livestock production efficiency via the adoption of science and technology.

Jesse Lanyon is in his second year of a Bachelor of Agribusiness / Bachelor of Agricultural Science program, majoring in agronomy.

His passion for the dairy industry started with showing dairy cattle at high school.

For the past seven years, he has worked at

Parker Pastoral, Kenilworth, which conducts a 700-cow TMR-based production system, during weekends and holidays.

He has also worked as a relief milker on several other local herds and as a research assistant with the University of Queensland.

At this stage, Jesse has his sights set on becoming an agricultural consultant, such as an agronomist or nutritionist.

Trevor Schoorl Memorial Scholarship Trustee and Lallemand Animal Nutrition Managing Director, Alex Turney, says Liam and Jesse both demonstrated the passion and thirst for knowledge that made Trevor one of the best in his field.

"Liam and Jesse are willing to stretch themselves to make the most of every day and that's exactly the type of person we were looking for," he says.

"Both of these young men are excelling in their studies in addition to holding permanent part-time agricultural jobs 15 to 20 hours a week during the semester and full-time jobs during their holidays.

"We are confident that Liam and Jesse will make the most of the opportunities provided by this scholarship and we look forward to seeing how their careers progress."



Silage 'future proofs' NSW feedlot



A small feedlot in the NSW Riverina has successfully 'future proofed' its nutrition program by adopting silage as its primary fibre source. Its decision to produce 2000 tonnes of 'home grown' silage each year will deliver a more cost-effective fibre source than cereal hay, as well as ensuring supply.

Royal Oak Beef operates a 3000 head feedlot at West Wyalong, turning off more than 6000 head of cattle for a range of domestic and export markets each year.

It is a partnership between Cootamundra beef producer, Greg Clark; livestock agent, Ben Hindmarsh of Jim Hindmarsh & Son, Moss Vale; and lotfeeder, Ben Maher, who manages Rodgers Creek feedlot in Warwick, Queensland.

In 2017, the trio teamed up to lease 'Oakover', a 300 ha property seven kilometres south of West Wyalong. The property hosts a 1000 SCU head feedlot, as well as backgrounding and cropping enterprises.

Since then, their team has rejuvenated the ageing feedyards and constructed new induction facilities, grain silos, a hayshed, storage bunkers, an 8 t/hour roller mill and additional pens, as well as spreading hundreds of tonnes of roadbase.

For the first three years, Royal Oak Beef utilised a simple dry ration comprising processed barley, cereal hay, a vitamin-mineral premix and water. "We've been wanting to incorporate silage from the start but we didn't get the chance until last season," Greg Clark says.

"We planted 200 ha of dual-purpose wheat in March. We were having a great season, so we put the cattle on it from late April to August. We were running one beast per hectare, so the crop probably paid for itself in weight gain alone.

"Once we decided we were going to cut the crop for silage, Ben Maher put me in touch with Alan Balfour from Maxheath Contractors,

who put me in touch with David Lewis from Lallemand. We stayed in touch throughout the process but I left the finer details to them and focussed on what we needed to do.

"Alan's job was to harvest the crop, transport it back to the stack and roll it; David's job was to maintain the nutritional value of the harvested crop and reduce spoilage during storage and feeding out; while our nutritionist, Phil Dew, made sure we got the full nutritional value at the other end."

An earthmoving contractor was engaged to construct two 70 x 30 m pads for the silage stacks. "We put in a lot of effort into making sure the silage pads were going to last," Greg says.

"Each pad is 0.5 m high in the middle and slopes away to ground level on either side so we get immediate drainage. All told, we spent about \$20,000 on earthworks but we need to be able to access them every day of the year, rain hail or shine, for years to come."

The crop was harvested in late November, yielding about 25 'wet' tonnes per hectare. The silage was treated with Magniva silage inoculant as it was discharged from a CLAAS Jaguar forage harvester.

The silage was transported to the stack and covered with SiloStop Max oxygen barrier film and then an outer layer of conventional white-on-black polyethylene film. The two film layers were sealed using truck tyre walls across the stack and soil along the edges.

"Cereal is hard to pack because of its hollow stems," Greg says. "If you don't use oxygen barrier film you risk losing the top layer to mould."

The stack was opened in mid-December, with silage analysed before being incorporated into the feedlot's background, induction, intermediary and finishing rations. The revised rations now comprise cereal silage, lucerne hay, barley, cottonseed, vegetable oil and a vitamin-mineral premix.



"We were really impressed – the smell was excellent and there was no spoilage," Greg says. "The real test is always in the feed bunk. The cattle just took to it."

An eight tonne excavator is used to 'rake' a one metre deep cut down the face of the stack each day. A 12 t wheeled loader then loads the silage into a twin screw vertical mixer wagon, along with the other ingredients.

"Keeping the face clean helps to reduce spoilage, which gives us more dry matter to feed," Greg says. "If you work upwards, you can create seams that allow oxygen to penetrate the stack, causing spoilage."

With silage on the menu for less than three months, Greg is yet to crunch the numbers but he has seen a noticeable improvement in livestock performance. "We are getting higher feed intake, higher conversion rates and faster growth rates, which reduces our cost of gain and that's what keeps our customers coming back," he says.

"To us, silage is about delivering a highly digestible and palatable fibre source rather than protein or energy. One of its big advantages is the reduced need for hay or straw – everyone hates grinding hay.

"We're saving at least 10 minutes each load because we don't have to chop the hay to the correct length. Also, we don't need to add as much water because the silage is already moist. Visually, the new ration holds together much better."

Greg expects the decision to incorporate silage into the ration will significantly boost the feedlot's bottom line. "Silage protects us against feed shortages, high prices or variable quality," he says.

"Last year, we spent more than \$200,000 on hay. By comparison, we spent about \$50,000 growing a wheat crop and then \$60,000 harvesting it for silage, so from a cost point of

view, it's a no-brainer.

"More importantly, we have locked in our feed price and supply for the next 12 months. Now that we have the confidence, we will produce even more silage in those years where we can and try to put 4000 tonnes into storage, which will be sufficient to keep us going for two years."

Technical Services Manager, David Lewis, says Royal Oak Beef followed the modern 'silage roadmap.' "This operation was carefully planned from the outset in terms of feed requirements, crop management and storage requirements," he says.

"The crop was managed and inspected throughout the season, it was harvested by experienced contractors using modern equipment, and it was ensiled and stored using the latest inoculant and sealing technology.

"The bottom line is that Royal Oak Beef is feeding a home-grown source of clean, hygienic feed to cattle that are healthy and performing well. The operators have achieved control over their costs and secured their feed supply."

Greg says silage can be utilised by any beef producer. "If we can do this, anyone can,"

he says. "About the only proviso is that your feeding requirements are sufficient to make it worthwhile using a contractor – I'd say the starting point is about 500 to 1000 tonnes, and that means you have to have the cattle to put in front of it.

Royal Oak Beef has about 2500 cattle on feed at any one time. "We occasionally put in our own cattle but we are predominantly focussed on custom feeding," Greg says.

"Our goal is to work closely with five to 10 loyal clients from Queensland, NSW and Victoria. West Wyalong is a great place to feed cattle. We have feed all around us and there are 10 major saleyards and five processors within five hours."

Soaring prices for feeder steers over the past 12 months means the team has looked to other opportunities, including feeding Holstein steers for 200 days and purchasing younger cattle. "Backgrounding has become an integral part of our operation to keep the feedlot full," Greg says.

"By backgrounding them on silage, we can get them to entry weights sooner and in more consistent condition, and they are already pre-conditioned to the feedlot ration."



▲ Royal Oak Beef's, Greg Clark, pictured here with Lallemand's David Lewis checking the face of the silage stack.



Silage on the menu at Beef Australia

▲ The Lallemand Animal Nutrition team at Beef Australia.

Silage was definitely on the menu at Beef Australia held recently in Rockhampton, with hundreds of beef producers taking the opportunity to call into the Lallemand Animal Nutrition stand to learn more about silage production.

Lallemand Animal Nutrition Managing Director, Alex Turney, says the stand showcased modern silage technology to the extensive beef industry.

"Silage is a really big part of the intensive livestock industries but for some reason, it has never really taken off in the extensive grazing sector, which is strange when you consider Australia is the driest continent on earth," he says.

"Silage allows you to preserve and store processed crops and pastures for years or even decades.

"You can then access that feed when you need it, allowing you to breed, grow and finish livestock, regardless of the season.

"In effect, silage allows you to 'future proof' your feed requirements instead of being reliant on the season."

The site included representatives from Fodderlink fodder marketing services, Pacific Seeds, CLAAS forage harvesting technology, Roto-Mix and a number of silage contactors.

"We are extremely grateful to all of our trade partners for their support and commitment to mounting this display," Alex says.

"We believe this is the first time a site dedicated purely to silage production has been staged at Beef Australia.

"Many producers have told us that they are interested in silage but didn't know where to start, so the seminar program was pitched at the basics.

"We started with the big picture – why grow silage? – and then drilled down to the specifics – how to grow it, how to harvest it, how to store it and most importantly, how to feed it.

"We have also developed a new brochure and video outlining what we call the 'modern silage roadmap', which is a DIY guide how to grow, harvest and store silage.

"Those producers who are already making silage came away with a much better understanding of our new forage inoculants and the value of oxygen barrier film and our silage sealing system."

The site also hosted a top-of-the-range CLAAS JAGUAR forage harvester, a vintage New Holland harvester and a silage bin full of sorghum silage

"The two harvesters provided an amazing demonstration of how far the industry has come in just 50 years," Alex says.

"The silage bin allowed visitors to touch, smell and view quality forage silage for themselves."

Billed as Australia's largest agricultural exhibition, Beef Australia showcases all facets of the Australian beef industry, including genetics, technology, trade and innovation, every three years.

This year's event attracted a record 115,866 visitors, even with the notable absence of international guests.

Representatives from across the food chain – beef producers, industry groups, researchers, advisors, processors, retailers, chefs, school groups, consumers and even activists – mingled to discuss, agree or disagree on all things beef.



1000 tonnes of silage coming up



▲ Nick Dyer is the winner of Lallemand's silage Giveaway competition that was promoted at Beef21.

Central Queensland beef producer, Nick Dyer, is the happy winner of a \$10,000 package of seed, forage inoculant, sealing consumables and technical support offered by Lallemand Animal Nutrition as part of its Beef Australia promotion.

The package is sufficient to produce about 1000 tonnes of silage.

Together with wife Anna, and three daughters, Nick runs about 2000 Brahman x European crossbred cattle across two properties in the Pine Hill district, about 40 km east of Alpha.

About 1000 breeders are run on 'Malanbar', a 5200 ha property located about 100 km north.

Steers and surplus heifers are then returned to the home property, 'Mountain View', where they are grown out to about 500 kg liveweight for the feedlot market.

About 60% of the 5000 ha home property has been blade-ploughed and sown to tropical legumes over the years.

Nick says he is always on the look-out for ways of improving his productivity.

"My family has been here for four generations but I'm mindful that we're only here once," he says.

"I look at this farm and ask myself how can we grow this business?"

"We can either invest more in blade ploughing, buy more land or try to intensify the business.

"Land around here is \$10,000 a beast unit, so we can either invest \$5 million to run an extra 500 cows or we can find another way to run an extra 500 head."

Nick has been quietly investigating the feasibility of producing silage for several years.

"I didn't go to Beef Australia specifically to visit

Lallemand Animal Nutrition but I certainly spent a lot of time on their stand once I found them," he says.

"It was like the Holy Grail of silage – their staff, the other companies and contractors were really helpful and the speakers were excellent.

"I particularly enjoyed the opportunity to talk to other beef producers who are already growing silage."

Nick is working with Lallemand Animal Nutrition Technical Services Manager, Jordan Minniecon, and hopes to plant about 60 ha of sorghum this summer, depending on the season.

"We're pumped and we're going to give it a crack," he says.

"We're mid-way through levelling a section of fertile black soil and intend to plant the crop using one of our old tractors and a borrowed combine.

"We're not going to invest too much in equipment until we have a paddock full of sorghum.

"Likewise, we aren't sure how we going to use silage but I can definitely see a role for silage in finishing the steers.

"Having 1000 tonnes of feed put away is going to be handy insurance against drought.

"Either way, this prize is going to open doors for us."



Don't confuse vapour barrier film with oxygen barrier film when sealing silage

Much thought, planning, labour and effort goes into planting, harvesting and storing silage to optimise its nutritional quality and dry matter content. These decisions can have a major impact on livestock health and performance – and ultimately, the profitability of your enterprise.

In this context, the importance of silage film selection cannot be overstated. Farmers are faced with a wide range of options when it comes to plastic film to preserve silage, including conventional black-on-white polyethylene film, oxygen barrier film, cling film and underlays.

There is confusion between 'vapor barrier', cling film, underlay and 'oxygen barrier' film. While they appear physically similar, there are a number of important differences in their design, composition and manufacturing technique that can have a major impact on the outcome.

Vapor barrier films and others are made of polyethylene and are widely used in the construction industry to prevent the migration of water between the external and internal walls of buildings. Used in agriculture, they serve an important role in preventing rain or humidity from entering the silage stack or pile.

However, they are not designed to retard the migration of air. Viewed under a microscope, polyethylene contains microscopic holes that allow oxygen to infiltrate silage, often causing significant spoilage in the top 60 to 90 cm of the stack or pile.

Polyethylene film is sometimes used as an underlay to eliminate air pockets between the forage and the top cover film. Whilst this serves a useful purpose, again, it will not prevent the infiltration of oxygen into the stack or pit.

Limiting oxygen infiltration is the single most important factor in maintaining forage quality and reducing wastage, particularly in long-term storage. Oxygen is one of the main

reasons why crops are harvested at specific crop moistures and why pits and stacks must be filled quickly, packed well and sealed immediately.

Optimal fermentation and storage of silage must occur under anaerobic conditions and this is best achieved using oxygen barrier film. Oxygen barrier film comprise several layers of film, typically an ethylene vinyl alcohol (EVOH) core surrounded by additional layers of polyethylene. In between these sheets are additional layers of polymers that 'glue' the sheets together. This creates a multi-layer oxygen barrier film.

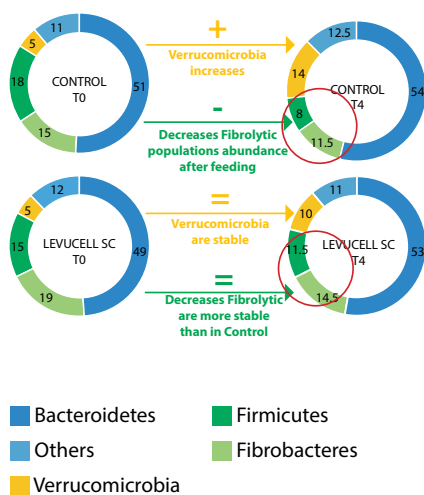
All true oxygen barriers used in agriculture have a minimum of five, or more commonly, seven to nine layers, for optimal resistance to the passage of oxygen and long-life flexibility. Properly placed, sealed and protected, they will help to produce to a top-layer forage quality that is nearly identical in quality to the interior of the silage mass.

Whilst the primary role of oxygen barrier films is to prevent oxygen from entering the silage pile or bunker, they also prevent the outward flow of gases produced during fermentation within the forage mass and serve as a vapour barrier.

The Oxygen Transmission Rate (OTR) is an industry standard test that should be available with any quality film. An OTR of less than 15 means the film is effective in blocking the infiltration of oxygen. By comparison, polyethylene films can have an OTR of 900.

Lallemand Animal Nutrition is a leading supplier of strain-specific forage inoculants and sealing systems specially selected for use in Australian conditions. They include strain-specific MAGNIVA forage inoculants, Silostop oxygen barrier film, SilageKeeper UV covers and SealKeeper gravel sealing bags.

Live yeast increases fibre degrading bacteria in grazing beef cattle



* Copies of 16S rDNA gene,
** Copies of 18S rDNA gene

Figure 1

Effect of the live yeast supplement on the rumen microbiota populations, before and after feeding.

Ruminants rely on microbes to convert otherwise indigestible feed material, such as plant fibres, into useable sources of energy and protein. It all happens inside the rumen, a huge fermenter, which hosts a rich and diverse microbiota. Thanks to this pivotal role in dairy and beef nutrition and health, the rumen has been one of the most extensively studied gut ecosystems. Grass-based diets can challenge rumen microbiota and the rumen environment. For instance, during turn-out to grass, ruminal subacute acidosis (SARA) can negatively affect rumen microbiota. Modern sequencing-based techniques have shed some light onto various aspects linked to ruminant performance and health. The Lallemand Ruminant Center of Excellence has pioneered metagenomic research into the interactions of live yeast probiotic with the rumen ecosystem. Here is one of the latest findings in this area.

■ Dry grazing conditions

A beef trial was conducted by University of Queensland, Australia, in 2019 on extensive grazing bulls. The bulls received daily 300g of dry-lick supplement, either control or supplemented with live yeast *Saccharomyces cerevisiae* CNCM I-1077 (LEVUCELL SC). Animals were grazing ad libitum low-degradable rhode-grass hay, known as dry grazing. Rumen fluid was collected before feeding the complement (T0h) and (T4h) after. Rumen microbiota was analysed using 16S rRNA amplicon sequencing.

■ Stabilised fibrolytic populations

The sequencing data analysis showed that, in the control group, the fibrolytic populations (*Fibrobacteres*, *Firmicutes*) decrease in relative abundances after feeding. This could be explained by the fact that every feeding (here of the dry lick) is affecting the rumen microbial ecosystem, leading to a reduction of the fibrolytic populations, which are highly sensitive.

However, bulls fed the live yeast showed a more resilient fibrolytic flora, and higher abundance of these populations after feeding (Figure 1).

■ Consequences on rumen fermentation profiles

In addition to microbiota analysis, the investigators looked into the rumen fermentation profiles. It appeared that the bulls receiving the supplement had higher propionate production (+8%) and decreased ammonia concentration. Both parameters can result from the higher fibrolytic populations. Rumen $\text{NH}_3\text{-N}$ concentration is closely linked to cellulolytic bacteria abundance and activity, and the *Fibrobacteres* in particular. The increased propionate is in line with higher abundance of *Fibrobacteres* bacteria (part of the VFA produced by those *Fibrobacteres* are propionate).

Altogether, this showed that specific live yeast modulates the rumen microbiota of beef raised under extensive pasture conditions and fed low degradable grass fibre. In particular by increasing the abundance of fibrolytic populations. This leads to increased concentration of propionate and better ammonia utilisation, which, in this program was reflected on the bulls growth performance (ADG and feed conversion rate were improved).



No milk without water: Drinking behaviour of dairy cows

	Ambient Temperature		
	5°C	15°C	28°C
Dried-off	43 L	58 L	78 L
15 L milk	62 L	77 L	97 L
30 L milk	76 L	92 L	112 L
45 L milk	96 L	112 L	132 L

Figure 1

How much water a dairy cow (approx. 700 kg) needs in litres per day.¹

Feeding in modern dairy farming is very challenging. Farmers have to put a lot of effort into it – feeding plans, formulation of ration and feed quality. However, often not enough focus is put on the water intake, even though it plays a vital role in milk production, control and regulation of body temperature and many other body functions of cows.

■ Daily water intake of dairy cows

Water serves a lot of functions in the body of a cow. Not only is it a solvent, but also a coolant and transport system. **Without a sufficient amount of water, milk production also reduces.**

Cows need around **60 to 120 litres of water per day**. The amount needed depends on animal weight, daily feed intake and environmental temperature, but also milk yield and lactation day. A dried-off cow for example needs approx. 50 to 70 litres of water a day. A high-lactating cow needs up to 200 litres on a hot day.⁴

Drinking water covers 80% to 90% of a cow's daily water demand. The rest is taken in through feed.² Per day cows go to the drinking trough between 3 and 10 times, out on pasture between 2 and 5 times, where they drink about 5 to 8 litres water per minute. This number may even be a lot higher – up to 25 litre per minute. Dairy cows need the most water after the milking process and feed intake.³

Table 1 shows how much water a dairy cow (approx. 700 kg) needs in litres per day.

■ Causes for low water intake and possible effects

Possible causes of water shortage are:

- Not enough troughs for the number of animals
- Wrong location of the trough

- Trough not working properly
- Wrong type of trough
- Insufficient water flow
- Dirty troughs
- Poor water quality

If animals do not have sufficient access to water, they consume less feed and their performance and activity levels drop significantly. They also excrete less urine. However, the concentration of urine increases. This can lead to increased possibility of disease and even poisoning.⁴

If a cow is not able to cover the demand of water she needs, it may lead to stress. Especially during the summer months, the combination of lack of water and high temperatures strain the animal's organism and metabolism, causing the animal to eat less and thus giving less milk.⁴

■ How does the continuous measurement of water intake work with smaXtec?

It's clearly shown that the drinking behaviour plays an important role in many processes in a cow's body – from milk yield to body temperature regulation. But how can the water intake be observed reliably and problems be detected early? The answer: with the smaXtec health system!

Due to the position in the reticulum, the bolus measures high-quality accurate data. One of the parameters measured is the water intake. In the smaXtec Messenger and smaXtec App the drinking cycles can be viewed individually in a diagram. When the system detects irregularities you automatically receive a drinking alert. By the means of these drinking alerts, farmers can take fast measures and monitor the health status as well as the feed intake.



There are two different alerts that indicate a problem with the water intake:

- Insufficient water intake: The number of drinking cycles per day is too low.
- Decrease in drinking cycles: The number of drinking cycles has dropped significantly compared to the previous day.

What are the benefits of such notifications? Abrupt changes in drinking behaviour are the **first signs of a serious disease or an indication of an inadequate water supply.**

Claw diseases in particular can be detected at an early stage through reduced drinking cycles, as the animals avoid going to the drinking trough due to the pain.

Practical example

smaXtec customers report that continuous monitoring of their animals' drinking behaviour has many advantages. In addition to the early detection of diseases such as lameness, problems such as broken or dirty troughs and poor water quality can also be

quickly identified thanks to smaXtec. This is shown by a success story from Vet Tommy Heffernan and an Irish smaXtec customer. The farmer received a large number of drinking alerts over a longer period of time. However, no health problems were visible. After a thorough examination of the water, it turns out that the water was heavily contaminated with bacteria. Due to the poor water quality, the animals drank significantly less, which was reliably detected by the smaXtec system. The problem was solved and the animals were optimally cared for again.

■ How does the smaXtec bolus measure water intake?

The smaXtec bolus measures the drinking behaviour of cows with the help of the temperature measurement, because the (cold) water passes directly into the reticulum where the sensor is located. The cold water causes a brief drop in temperature in the environment of the sensor, resulting in 1-3 significantly lower temperature

measurements. The rumen then regulates itself within a few minutes and the normal temperature range is shown again.

1. Beede, D.K, 1992: water for dairy cattle in "Large Dairy Herd Management". – Amer. Dairy Sci. Assoc. Champaign, Ill und Meyer et al. 2002: Untersuchungen zur Wasseraufnahme von Milchkühen. – VDLUFA-Schriften 58, 315

2. https://www.lfl.bayern.de/mam/cms07/ite/dateien/27910_wasser.pdf

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LALLEMAND PORTFOLIO GETS THE ORGANIC 'TICK'



« Australian Certified Organic (ACO) has recognised 10 strain-specific microbials marketed by Lallemand Animal Nutrition as allowed inputs in organic food and fibre production systems.

Five products – AVIGUARD, LALFILM PRO, MANURE PRO, PROTERNATIVE and YANG – have been given unrestricted approval, while another five – ALKOSEL, ALKROM, BACTOCELL, MAGNIVA Classic and MAGNIVA Platinum – have restricted approval.*

Lallemand Animal Nutrition Managing Director – Australia, Alex Turney, says the certifications will help to meet the growing demand for natural alternatives to antibiotics used in intensive livestock production.

"These certifications give livestock producers and feed manufacturers access to a range of innovative and scientifically-proven solutions to support livestock health and performance," he says.

"These products are already widely used in Europe and the USA."

ALKOSEL* is whole-cell inactivated yeast (*Saccharomyces cerevisiae*) that provides a rich source of bioavailable selenium, a natural antioxidant. Added to the rations of livestock, it supports immune function and fertility, particularly during times of physiological or environmental stress.

ALKROM* is an inactivated dried whole cell yeast (*Saccharomyces cerevisiae*) that is enriched in the essential trace element chromium.

BACTOCELL* is a lactic acid bacteria (*Pediococcus acidilactici* MA 18/5M) that is authorised for use as a gut flora stabiliser in laying hens, broilers and other avian species.

MAGNIVA Platinum** is a 'next generation' forage inoculant that combines a patented bacterium strain, *Lactobacillus hilgardii* CNCM I-4785, with the industry standard, *Lactobacillus buchneri* NCIMB 40788. This unique combination provides fast-acting 'front end' fermentation with proven 'back end' aerobic stability, allowing silage to be opened earlier and last longer after opening.

MAGNIVA Classic** is a strain-specific forage inoculant that contains a high concentration of *Pediococcus pentosaceus* NCIMB 12455, a lactic acid-producing bacteria that dominates silage fermentation after four hours, in combination with *Lactobacillus plantarum* CNCM MA 18/5U.

AVIGUARD is a unique and natural starter culture that is derived from the gut bacteria of healthy, pathogen-free birds. Formulated as a water-dispersible powder, it is sprayed onto day-old chicks to promote the establishment of beneficial digestive microflora.

LALFILM PRO is a microbial complex that helps to form a favourable on the surfaces of livestock premises to minimise colonisation by undesirable pathogens. It contains a blend of strain-specific Bacillus spp. and lactic acid bacteria. The water-dispersible powder

formulation is diluted and applied as a low pressure spray to internal surfaces, including floors, walls, ceilings, pens and feeders, before livestock enter the premises.

MANURE PRO is a unique enzymatic and bacterial treatment that promotes the development of beneficial microorganisms in livestock bedding, litter, manure and slurry, thereby improving bedding quality, reducing the emission of odorous gases and enhancing the nutrient value of manure. This water-dispersible powder is applied as a diluted spray to farm buildings, bedding/litter, manure heaps or slurry pits.

PROTERNATIVE is a strain-specific live yeast (*Saccharomyces cerevisiae boulardii* CNCM I-1079) that helps to maintain a balanced population of rumen microbes, rumen function and digestion in ruminants. It helps to reduce sickness during periods of metabolic challenge, such as weaning.

YANG is a unique combination of carefully-selective inactive yeast strains, including *Saccharomyces cerevisiae* and *Cyberlindnera jadinii*, that has been scientifically proven to support the digestive and immune functions in livestock. It was developed by Lallemand Animal Nutrition in partnership with leading research institutions throughout the world.

ACO, a non-profit subsidiary of Australian Organic Ltd, has previously recognised three other products marketed by Lallemand Animal Nutrition in Australia as allowed organic inputs, LEVUCCELL SC, LEVUCCELL SB and AGRIMOS.

LEVUCCELL SC is a natural, strain-specific live yeast (*Saccharomyces cerevisiae* CNCM I-1077) that improves the health and performance of dairy and beef cattle. It is scientifically proven to improve rumen function, optimise rumen pH and improve fibre digestion.

LEVUCCELL SB is a strain-specific live yeast (*Saccharomyces cerevisiae boulardii* CNCM I-1079) that enhances the intestinal microflora of monogastrics. Its uses include the reduction of carcass contamination by Salmonella spp. in broiler chickens and improving feed efficiency and reducing heat stress in pigs.

AGRIMOS is an enriched yeast derivative that contains a rich source of mannan-oligosaccharides, which help to maintain optimal balance of beneficial microflora in the gut and rumen and stimulate immune function. It is produced from *Saccharomyces cerevisiae*.

* Restricted probiotic for occasional, infrequent use, to address animal health concerns. Must not be provided on a routine basis.

** Restricted products contain synthetic non-active ingredients.

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