LALLEMAND ANIMAL NUTRITION

SPECIFIC FOR YOUR SUCCESS

IN THE MIX

SEPTEMBER 2019

#49

THE BIGGEST BREAKTHROUGH IN FORAGE INOCULANTS IN 20 YEARS!

SPECIFIC FOR YOUR SUCCESS

IN THE MIX #49

SEPTEMBER 2019

#PASSION FOR FERMENTATION

1988

The first bacteria plant of the group is based in Saint Simon, Auvergne (France).

Over 30 years ago, Lallemand started to focus on bacteria for the malolactic fermentation of wines. In 1988, we started our own production with the acquisition of a first bacteria plant in France, followed by the Milwaukee plant. We developed solid expertise in bacteria production. Today, the group operates five bacteria plants in Europe and North America - two are dedicated to animal nutrition.

Welcome

Welcome to the Spring Edition of In The Mix. As always there is plenty going on here at Lallemand but I first want to acknowledge the severity of the drought raging across parts of Australia, now reaching unseen heights. It's unbelievable to think major rural towns are potentially running out of water in 3 - 6 months. We have seen increases in pork and milk prices but we are still at the tough end of high grain and water prices for the foreseeable future. It's tough out there. Remember focus on efficiency and proactive health of livestock and where possible "forage planning" should remain the number one priority. All the best for Spring and thanks for your support.

Alex Turney - Country Manager

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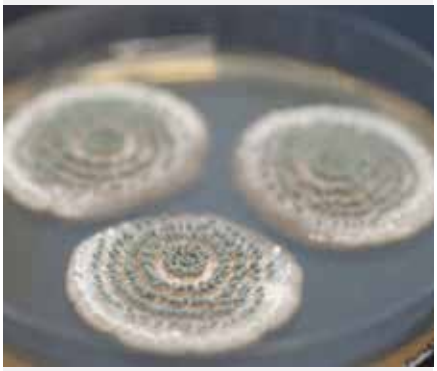
Why are pigs sensitive to mycotoxins?

Mycotoxins are a threat well known to feed producers. They are toxic secondary metabolites produced by moulds, particularly present on cereals. Among all livestock species, pigs are one of the most strongly impacted by the presence of mycotoxins in feed for two reasons:

1) they consume large quantities of cereals, and
2) they are particularly sensitive to mycotoxins.

Recent findings indicate the pig intestine, especially the gut barrier, and the animal's immune response are two main targets for mycotoxins from feed. This means there is an increased risk for pathogen translocation from the gut lumen to the blood flow while systemic immunity is altered. Mycotoxin contamination can thus be linked to a **higher risk of infectious diseases** and **decreased vaccine efficacy.**

A variety of solutions, including administration of probiotics, are under investigation to tackle the effect of mycotoxins in pigs.



Fungus (Photo: INRA)

Two new team members

Lallemand Animal Nutrition is delighted to announce the appointment of Nathan Lister and Katrina Hubeek to its technical services team to bolster our service delivery in the southern Queensland and south-eastern Victoria. Based in Toowoomba and Gippsland, respectively, they will both work across the forage and microbial feed additive sectors.

Nathan has worked in the agricultural industry for the past decade, with a strong focus on animal health, ruminant nutrition and livestock management via his former roles with feed ingredients supplier, Biomin Australia and CRT. He comes from a farming family and has an Associate Degree in Production Animal Science.

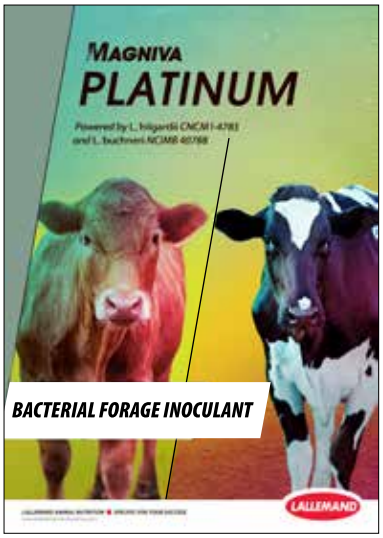
Katrina also has more than a decade's experience in ruminant nutrition and animal health via her former roles with leading agribusiness organisations, CopRice, Devondale Murray Goulburn and Virbac. As a member of the Australian Association of Ruminant Nutritionists (AARN), she will add tremendous depth to our feed ingredient and forage businesses. Katrina has a Bachelor of Agricultural Science and an Advanced Diploma of Agriculture from the University of Melbourne.

Nathan Lister

Katrina Hubeek

New generation silage inoculant release

MAGNIVA PLATINUM



MAGNIVA CLASSIC

A new generation inoculant that is scientifically proven to improve aerobic stability sooner and for longer has been released in Australia.

Developed by Lallemand Animal Nutrition in association with leading agricultural research institutions in South America, Europe and USA, MAGNIVA PLATINUM combines the newly-discovered and patented *Lactobacillus hilgardii* CNCM I-4785 bacterial strain with the industry standard, *L. buchneri* NCIMB 40788.

It supersedes Lallemand's well-known Lalsil inoculant, a *L. bucheri 40788* and *Pediococcus pentosaceus* combination that has been the industry global benchmark for maize and cereal silage for more than 25 years.

Lallemand Animal Nutrition Australia Managing Director, Alex Turney, says MAGNIVA PLATINUM provides silage contractors and livestock producers with a powerful new tool to control aerobic stability and more flexible feeding options.

"The proven synergy of these two bacteria provides faster 'front end' fermentation and greater 'back end' aerobic stability than either strain alone," he says.

"In practical terms, this means silage can be opened with aerobic stability up to 15 days earlier than existing inoculants whilst significantly reducing spoilage during storage and feeding out.

"This means producers can deliver more and better quality silage to livestock, which has important flow-on benefits in terms of production and profitability.

"Feed is the largest single cost in most dairy operations, so any improvement in reducing feed costs is going to have a major impact on milk production efficiency.

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

The fermentation benefits of *L. hilgardii 4785* were first identified by the Federal University of Lavras in Brazil more than decade ago, while *L. Buchneri 40788* is regarded as the industry's 'gold standard' for improving aerobic stability.

Lallemand has filed an international patent for its *L. hilgardii / L. Buchneri* combination.

The usage has already been authorised as an approved silage additive by the European Union.

Lallemand Animal Nutrition has thoroughly assessed the performance of MAGNIVA PLATINUM under local conditions.

"We have quietly conducted a number of commercial demonstrations in a range of crops, including lucerne, cereals, corn and sorghum, in northern and southern Australia over the past two years," Alex says.

"We are confident that this combination will deliver improved aerobic stability, consistently faster and for longer across a wide range of crops and moisture levels."

The company's existing pasture silage inoculant, TriLac, will be reformulated and relaunched as MAGNIVA CLASSIC.

It will contain an increased concentration of *Pediococcus pentosaceus* NCIMB 12455, a lactic acid-producing bacteria that dominates silage fermentation after four hours, in combination with *L. plantarum* CNCM MA 18/5U.

MAGNIVA PLATINUM and CLASSIC will both contain a specific enzyme formulation to release sugars from the forage fibre content.

"The enzyme complex not only helps to improve the initial fermentation, it enhances the digestibility of the silage."

MAGNIVA Platinum and Classic are both manufactured using Lallemand patented HC formulation technology.

"HC technology ensures a more consistently mixed inoculant, which retains an effective concentration of live bacteria in solution longer," Alex says.

"This results in a more even application to the crop and a longer tank life in solution."

Heat stress in sows: benefits of antioxidant blends

ANTIOXIDANT BLEND
under heat stress:

- ⬆ RETURN TO ESTRUS RATE
- ⬆ FARROWING RATE
- ⬆ BORN ALIVE PIGLETS

Ref: Barbé F., Bravo De Laguna F., Chevaux E., Koehne C., Saornil D., Korzekwa M., 2019. Effet d'une supplémentation en antioxydants sur les performances de reproduction des truies. 51ème Journées de la Recherche Porcine, Paris.

High summer temperatures increase the chance that sow herds will be exposed to heat stress. Heat stress in sows causes a longer weaning-to-estrus interval, decreased farrowing rates and failure to maintain pregnancy. Conception rates of sows are also lower in the summer. When sows are bred in the summer, they farrow smaller litters, and the average piglet weaning weight is significantly smaller than other seasons. Supplementing sow diets with antioxidants is crucial during the hot season, as proven by recent data.

Weaning to oestrus

A specific fertility program containing vegetal superoxide dismutase (SOD) and selenium yeast as primary cellular antioxidants can help balance the negative impact of heat stress on the reproductive performance of sows, by reinforcing the antioxidant status of the animals. First and foremost, the application that shows the biggest impact on several parameters is the weaning-to-estrus interval. Embryo development requires high antioxidant supplementation to protect the fetus' growth and allow for good implantation in the uterine wall. Supplementing the sow with a high-quality antioxidant blend after weaning until insemination will help improve the fecundation and nidation process, ensuring good embryo viability and subsequent piglet quality.

New data under heat stress

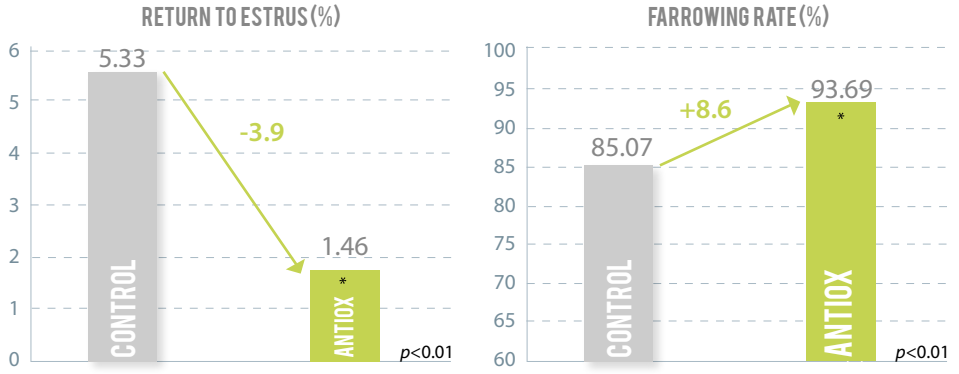
A study performed in a commercial farm (Barbé *et al.* 2019) demonstrated a positive effect of the Lallemand antioxidant blend on all the important parameters that are usually negatively impacted during summer, such as: farrowing rate, return to estrus and rate of born alive piglets.

The ALKOSEL + MELOFEED group showed reduced mean percentage of stillborn piglets in sows between parities 3 and 6, corresponding to the highest reproductive performance in the sows' life cycle.

During heat stress, the overproduction of reactive oxygen species (ROS) could overwhelm the animal's own antioxidant capacity and lead to an imbalanced oxidative status. Supplying sows with a specific antioxidative solution will help rebalance the oxidative status and reduce the impact of ROS on the organism. This specific blend was formulated to optimise the antioxidant defense in sows around insemination and is a promising concept to support reproductive performance, especially during the summer season.

Figure 1

*Field trial conducted in Germany with antioxidant blend containing selenium yeast and vegetal SOD for 5 days before weaning to insemination (n = 429 sows ; *p < 0.01).*



Precision feeding: the live yeast factor

Ref: Ali Haimoud-Lekhal D, Chevaux E., Piron A. Case study: Prediction model evaluation of Saccharomyces cerevisiae I-1077 on dairy cow milk production. 23ème Rencontres Recherches Ruminants, 7-8 December 2016, Paris

Effects of the rumen specific live yeast Saccharomyces cerevisiae CNCM I-1077 on fibre degradation is well documented. Thanks to the mode of action of the live yeast, an algorithm could be developed to predict the effect of the supplement on feed digestibility when formulating for ruminants.

Building a dynamic model

S. cerevisiae CNCM I-1077 (LEVUCELL SC) improves neutral detergent fibre (NDF) degradation in the rumen through its modulation of the endogenous microbiota. However, we also know this effect must be modulated by the pH of the rumen. Indeed, a low pH has a deleterious effect on the ruminal fibrolytic microflora. Hence, the lower the pH, the lower the fibre degradability. The other known effect of Levucell SC is the stabilisation of the rumen pH. Therefore, the extent of effect of the yeast on fibre degradation is even more important when the pH is low or the diet is acidogenic.

We evaluated the effect of LEVUCELL SC on the degradability of a large array of feed and forage samples. Then, estimated the rumen pH according to the level of rapidly fermentable sugars in the ration. With this information, it was possible to establish an algorithm that predicts the percentage of extra energy available from a ration in the presence of this rumen modifier. By taking into account the kinetics of fibre degradation and the environment of the rumen (pH), we are providing a new dynamic approach to feed formulation. The innovation was to build a biological system that takes into account the rumen microbiota activity (Figure 1).

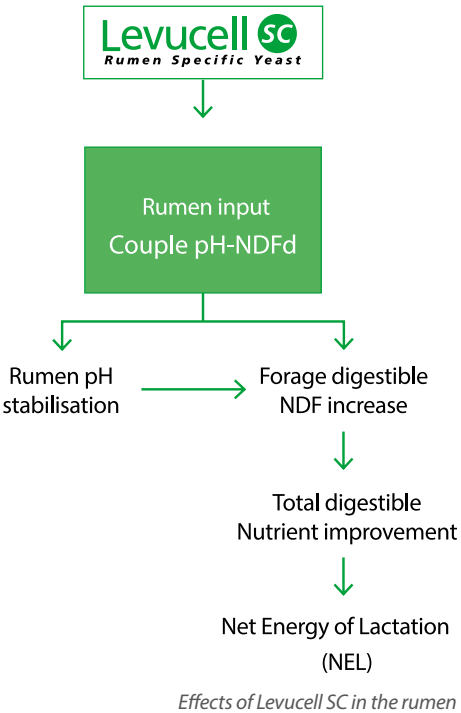
Field validation

The algorithm was validated at the farm level by Professor Djamila Lekhal at the Purpan Engineering School in Toulouse, France (Ali Haimoud-Lekhal et al., 2016). In this controlled trial, conducted on 38 Holstein dairy cows fed a non-acidogenic diet based on corn silage, alfalfa hay and bicarbonate, the live yeast supplementation increased milk production by 1 Kg/day while improving feed efficiency by 6%. This is correlated to the predicted effect using our algorithm (+1.1 Kg Milk/day). Other studies also confirm the accuracy of the prediction.

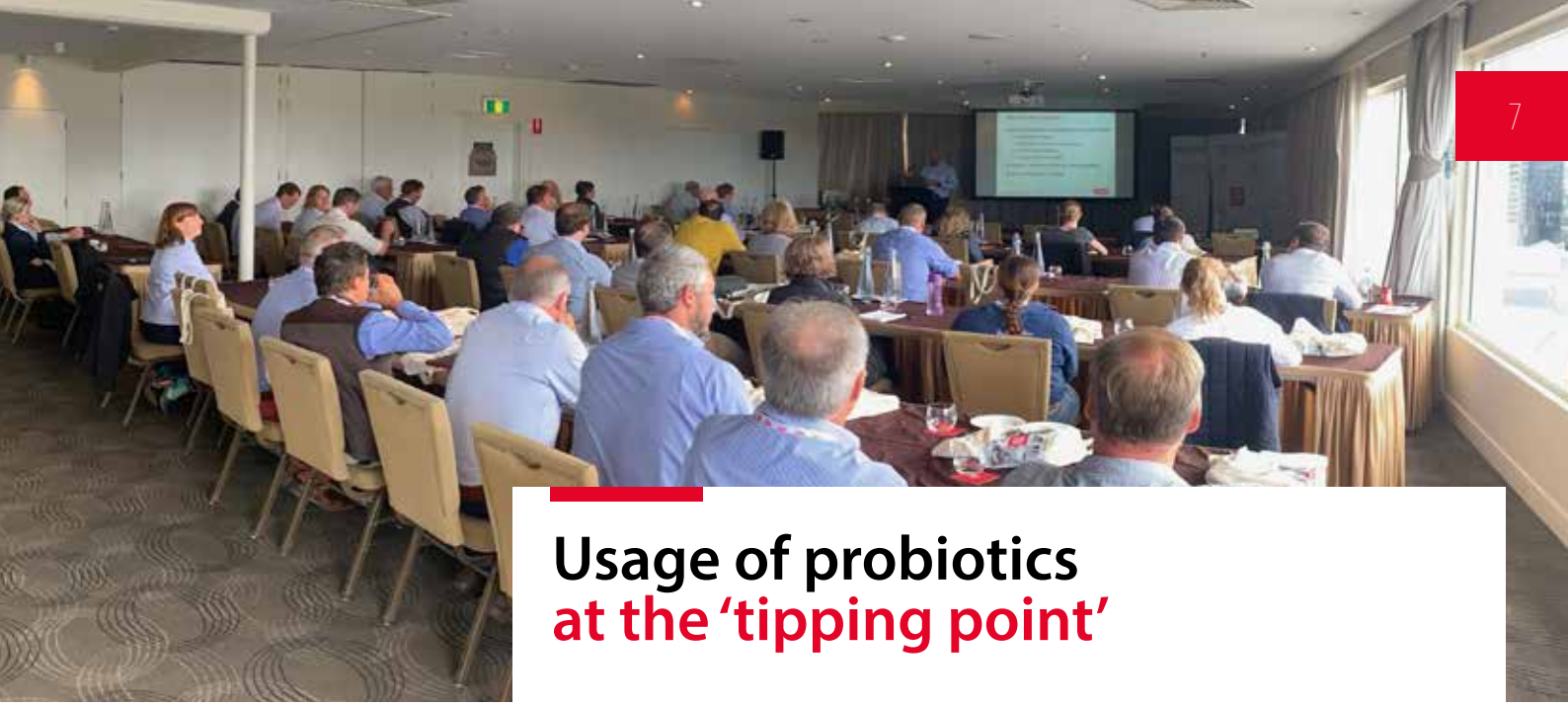
Implication for feed formulation

At the feed mill level, this model can be implemented within formulation systems to give an energy value to the live yeast supplement and help precision feeding. The live yeast effect can be considered either when seeking to maximise milk production or to reduce feed costs in a context of least cost formulations.

Figure 1



Effects of Levucell SC in the rumen



Usage of probiotics at the 'tipping point'

RUMEN REPORT

A NOVEL rumen health survey conducted by Lallemand Animal Nutrition has shown a strong causal link between poor rumen function and premature culling for poor reproductive performance, mastitis, lameness and even temperament.

Led by Toowoomba-based Technical Services Manager, Natalie Schwerin, the company examined 592 rumens from cows culled from 17 dairy herds in Tasmania, Victoria and NSW.

The sample represented a range of feeding systems and feed additives. The cows had an average production of 8377 litres over 3.6 completed lactations.

Reasons for culling included poor reproductive performance, production, type, temperament, sickness, injury or age.

Each rumen was examined for the presence and severity of scarring and lesions.

THE ADOPTION of probiotic feed additives is at the 'tipping point', as producers, processors and consumers alike search for natural alternatives to antibiotics to maintain rumen stability and gut integrity in intensively-fed livestock.

In his opening remarks at Rumen Health technical seminars held in Brisbane and Melbourne, Lallemand Managing Director, Alex Turney, said there has been an exponential increase in the use of microbial derivatives in the past five years.

"Dairy producers have relied on antibiotics to protect rumen function and improve production efficiency for more than 50 years but I really think we've reached the tipping point in regard to probiotics," he said.

"In the past 12 months alone, one of Australia's largest feedmills has decided to include a yeast product as a standard ingredient, replacing its long-standing use of the industry-standard ionophore.

"We estimate that more than 10% of dairy cows in Australia are now fed a strain-specific yeast and another 30% or so are fed a microbial derivative of some sort.

"Very soon, probiotics will become the norm, not the exception.

"Likewise, there has been widespread adoption of probiotics in the beef, pork and poultry industries."

Lallemand Animal Nutrition is global leader in the production of microbial derivatives used in the intensive livestock industries.

"Lallemand is the only company that has identified specific strains that deliver scientifically-proven outcomes in ruminants and monogastric species," Mr Turney said.

"Levucell SC and Levucell SB are Certified Allowable Inputs in organic farming systems and are Registered Allowable Inputs in the EU, which is the key to exports of dairy and beef products to the EU."

Attended by more than 70 of the country's leading livestock nutritionists and consultants, the seminars reviewed the latest technology for managing and monitoring rumen function in dairy and beef cattle.

"A well-functioning rumen is the key to optimising cow health, fertility, production and ultimately the profitability of any dairy enterprise," Mr Turney said.

"These seminars provided a friendly forum to review current thinking and to share new research and technologies in a friendly environment."

The program was led by two international guests, Dr Mary Beth de Ondarza, who is a leading US dairy nutritionist and consultant; and Lallemand Animal Nutrition Technical Services Expert, Tony Hall, who has more than 30 years' experience in dairy production systems throughout the world.

Mary and Tony presented a range of topics, including nutritional strategies, fibre evaluation, additives, cow comfort, feed management and transition management.

Other speakers included smaXtec European Sales Manager, Verena Uidl, who discussed her company's rumen monitoring and analysis systems, and Lallemand Animal Health Technical Services Manager, Natalie Schwerin, who presented the findings of a unique rumen health survey (see panel).

Each session was followed by a dinner hosted by Lallemand Animal Nutrition.

"These dinners provided the opportunity for participants to network with their industry colleagues and for us to say thanks for the ongoing support of Australian nutritionists and consultants," Mr Turney said.

Don't skip the weight on silage covers

5 STEPS TO SEAL YOUR SILAGE

1. Cover as soon as possible after compacting. This helps create the anaerobic environment required for the silage.

2. Don't skimp on plastic – use a plastic film with validated oxygen barrier properties. The extra expense will be returned several times over via improved DM recovery and silage quality.

3. Cover the entire pit / stack with plastic when filling is complete and seal.

4. Be sure there is sufficient weight along the edges to keep the plastic in place and prevent air infiltration. Overlap the seams of sheets of plastic by at least one metre. Cover with SilageKeeper Covers and weigh down the with SealKeeper Gravel Bags.

5. Inspect covers on a regular basis for tears or damage and repair immediately. Effectively covering and sealing silage helps prevent oxygen ingress, which is the enemy of high-quality silage.

The extra step of sealing freshly chopped forage can save you money, nutrients and dry matter (DM) and reduce the potential for digestive upsets and health issues in livestock.

Lallemand Animal Nutrition Technical Services Manager, David Lewis, says the benefits of covering and sealing silage far outweighs the extra effort and expense involved.

"There is absolutely no question that good coverage and sealing save money by preserving nutrients in the silage, reducing dry matter losses and maintaining the quality of the feed," he says.

"It is estimated that thorough coverage and sealing of a 12 x 30 metre bunker with Silostop oxygen barrier film can increase producer returns by about $2,000 by reducing dry matter loss.

"This does not take into account the negative impact of feeding spoiled silage upon livestock performance caused by reduced feed intake, digestibility and metabolic disorders."

David says a combination of Silostop oxygen barrier film, covering and sealing correctly can help to prevent these unnecessary losses.

"A validated oxygen barrier film such as Silostop prevents oxygen from entering the silage, limiting the growth of spoilage-causing yeasts and moulds.

"Any tears or holes will allow oxygen into the silage and reduce the effectiveness of the covering, thus should be repaired immediately.

"Scientific studies have validated Silostop oxygen barrier film significantly reduces the amount of dry matter loss and inedible material in the top metre of silage, as well as well as increasing the duration of aerobic stability in bunker silage.

"Car tyres have been the standard for anchoring silo covers for years but there are far easier and more environmentally-friendly options available, such as gravel bags sealing weights specifically for sealing silage."

Lallemand Animal Nutrition is Australia's leading supplier of silage inoculants and sealing systems, including the Silostop range of oxygen barrier film, black and white PE silage films as well as 100% UV woven protection covers and gravel bags.

These include Silostop Max, an 80 micron, orange-on-black multi-layer OB film for long term storage or more challenging situations; and Silostop Orange, a 45 micron OB film. Both films need to be combined with either a top sheet of B/W plastic or 100% UV woven protection covers.

Lallemand takes on The Kokoda Challenge

The Kokoda Challenge is an experience of a lifetime. It will test your strengths as you push your body and mind to its limits to complete the event. At the same time, you will gain the incredible power and motivation that come with contributing to and being part of a team. This is what the two team made up of Lallemand Animal Nutrition staff was hoping to achieve when they completed the 48km course in July.

Our two teams of four people each successfully completed the challenge in 14hr and 48mins. Three Technical Service Managers - Natalie Schwerin, Nathan Lister and Jordan Minniecon plus Operations Manager - Siobhan Goodwin, and Country Manager - Alex Turney completed the challenge. Making up the other spots in the team was Phil Wheldon, ISDS warehouse manager, Cathy Mitchell, a friend of Siobhan and Luca Turney, Alex's 13yo son.

The Kokoda challenge is a tough event with a big heart and is designed to reflect the key elements of the Spirit of Kokoda - courage, endurance, mateship and sacrifice which was forged by the Australian troops from the 39th and 42nd Militia on the Kokoda Track in Papua New Guniea during WW2.

The annual event, held in the Gold Coast Hinterland raises funds for The Kokoda Challenge Youth Program. The Challenge was established with two main aims in mind. Firstly to educate young people and raise general public awareness of the gallant victory by Australian soldiers and secondly, to identify young Australians who are at a crossroad and support them through a 14 month community counsel.

The Lallemand teams were also doing the challenge in remembrance of Trevor Schoorl.

"We remembered our missing colleague Trevor Schoorl through our courage, endurance, mateship and sacrifice," Alex said.

"Trevor was an old hand at the event, having previously trekked in the 2014 and 2016 events of which he said it was one of the best things he has ever done."

"It was a special experience for all involved and a perfect way to honour Trevor's contribution to our lives."

"Gen and Abby Schoorl even made a surprise visit to see us off."

Thanks goes to the support crew of Angela Turney, Kathie Moore and Ben Morgensen.

If you wish to contribute to The Trevor Schoorl Memorial Education Fund you can do so by direct deposit.

SWIFT CODE: NATAAU3304B

BSB: 084 938

ACC NO: 30 501 5625

ACC NAME: GM Schoorl ATF The Trevor Schoorl Memorial Education Fund

There is no expectation or obligation on anyone to contribute to this fund. Thank you for making the time to give this idea some consideration.

Heat stress management starts in the silo!

Heat stress is a well-established and growing issue for ruminants across the world. It has a huge financial impact linked to both milk and meat yield reduction and also a longer-term impact on animal health. Housing, nutrition and herd management are important to limit heat stress risks and impact, but forage quality shouldn't be overlooked, meaning that heat stress management requires planning ahead!

Why silage quality is even more important in summer ?

When ensiled forage represents a major part of daily feeding, it's essential the silage produced is of the highest quality possible. Poorly fermented and preserved silages are often of lower feed quality and tend to heat considerably at feedout and, as such, animals will avoid eating this silage. Moreover, aerobically unstable silages help create an ideal environment for natural populations of undesirable yeast and mould to proliferate, lowering both nutritive values and palatability while also significantly increasing dry matter (DM) losses. Heating silage could see its nutritive value decrease by as much as 16% before moulds become visible (Borreani et al, 2018) and DM losses can be more than 15%. Poor quality silage is also prone to higher levels of some mycotoxins such as deoxynivalenol, which has negative effects on rumen microflora and will upset the microbial balance in the rumen. As a result, the already stressed animal will be placed in further danger of Sub Acute Ruminal Acidosis (SARA) development.

Focus on silage management

Silage management is the first key to improve the silage quality and stability at feedout, even under hot temperatures. The best management practices should be implemented at harvesting. It is important to pack the silo properly, seal it with good quality plastic (oxygen barrier plastic) and weigh the cover down correctly.

Using an appropriate forage inoculant is crucial in producing the best quality silage possible. Products containing bacteria that have been tested extensively and independently, such as *L.buchneri* NCIMB 40788 and *L.hildardii* CNCM I-4785 have been proven to inhibit yeasts and mould development in the silo and at feedout. This not only reduces DM and energy losses of the silage, it also ensures high-quality silage, especially during the more challenging summer months.

FEEDING POOR QUALITY SILAGE IN SUMMER:

- ⬆ FEED TEMPERATURE
- ⬇ DMI
- ⬇ FEED VALUE
- ⬆ SARA RISKS

Free global resource to help you produce high quality silage

Take control of your silage quality with the latest management tips and advice found on our brand new website QualitySilage.com.

Lallemand Animal Nutrition is proud to launch QualitySilage.com, a new educational website dedicated to silage management, from seed to feed.

QualitySilage.com is a free global resource providing both practical and technical information to help producers make the best quality silage from a vast range of forages.

With contributions from global silage experts, this content-rich site is also a platform for exchanging tips and stories on silage quality through the brand new new Facebook page Quality Silage Experts (www.facebook.com/TheQualitySilage/).

QualitySilage.com is part of the Lallemand Forward Program, specifically chosen service solutions that enhance people, knowledge and production practices from Lallemand

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Accelerated depreciation for fodder storage

Farmers can claim accelerated depreciation on new fodder storage assets following changes made by the Coalition Government last year.

And those receiving Farm Household Allowance who are forced to sell livestock during the drought may continue to receive Farm Household Allowance (FHA) payments if the profits are deposited into a Farm Management Deposit account.

Minister for Drought David Littleproud said the accelerated depreciation meant farmers could claim the entire depreciation for feed storages built last year in this financial year.

"Farmers need to store more feed for their animals during drought, and we're helping cover the cost of new sheds, silos and other storages," Minister Littleproud said.

"This is one more way we can help farmers during drought.

"The accelerated depreciation for fodder storages joins existing measures to help farmers depreciate water infrastructure and fencing costs.

"Also today, those farmers receiving FHA who sell livestock due to hardship such as drought will not have that affect their FHA payment, so long as they put the sale money into their Farm Management Deposit account.

"This is a common sense step to make sure farmers aren't penalised for doing the right thing and will help our producers set some money aside for re-stocking when the drought breaks.

"We continue to help farmers get through this drought with $6.3 billion of support. Our support is spread right across federal areas of responsibility – Farm Household Allowance, Emergency Water Infrastructure Rebate, Rural Financial Counselling, pests and weeds management, concessional loans and the Drought Communities Program.

"We've also extended the instant asset write-off for small businesses to 30 June 2020 and increased its value from $25,000 to $30,000.

"Later this year, the Regional Investment Corporation will offer drought restocking and replanting loans of up to $200,000, with a two-year interest free period, to help farmers restock and replant when conditions improve after drought. On top of this, we'll soon have the Future Drought Fund in place to help our rural communities build resilience with $100 million per year towards building resilience and greater preparedness for future droughts."

Of course, with any change to the taxation landscape it is always important to consult your independent tax professional to see how your business may be impacted.

IN THE MIX

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