

International meeting addresses the challenges of production with live yeast

Lallemand Animal Nutrition recently held their fifth international *S. cerevisiae* boulardii (Levucell SB) Technical Meeting in Denmark. The objectives of this meeting were clearly laid out by Matthieu Baulez, global manager monogastric feed additives for Lallemand who said: "Today, the probiotic concept in animal nutrition is increasingly accepted, the science is there, and we can say that Levucell SB is very well documented, for both its modes of action and production benefits." The meeting featured renowned speakers from various and complementary backgrounds (academics, industry, veterinarians and pig farmers) including Dr Isabelle Oswald from INRA (France), Torben Jensen from Vestjyllands Andel (Denmark) and Pierre Lebreton from Tecnor-Sofac (France). The talks progressed from sow to piglet performance and health challenges, addressing topics such as sow feed efficiency, piglet vitality at birth and weaning performance, immunity and vaccination efficacy when facing a mycotoxin challenge, removal of antibiotics from feed and pathogen control. The last word was left to a local pig farmer who shared his own experiences. His testimonial illustrated the fact that, in the ever challenging world of pig production, live yeast can be a valuable tool to help reduce the usage of medicines, while optimising production performances.

Pierre Lebreton, swine nutritionist at Tecnor-Sofac in France, started proceedings with a presentation about feed efficiency in sows which represents a crucial criteria for optimising feed formulation at a time when feed represents up to 70% of production costs.

It is scientifically proven that Levucell SB enhances feed efficiency in sows by 2-3%, but this parameter remains difficult to measure at farm level.

Pierre demonstrated how, by fine-tuning feed formulation to follow the sows' changing nutritional needs, and taking into account the Levucell SB effect on fibre digestibility, his feed company managed to design least cost formulation feeds.

He illustrated this with some practical examples of gestating and lactating feed formulations where this product could help to reduce feed cost (net energy and soluble fibres are reduced to account for the product's positive effects on feed digestibility), without affecting performances.

They have been using some of these formulas for more than two years now and no change in sow body condition has been reported.

Moreover, in lactation, producers have observed positive changes in sow behaviour, such as less constipation and more sows laying down on their sides, convincing them to continue with this type of formulation. He concluded that Levucell SB helps to save money, stabilises and homogenises feed valorisation and finally makes the producer's life easier.

Piglet vitality at birth

Another proven effect of this product for sows is the improvement of farrowing quality and litter performance. It is now admitted that piglet birth weight is not sufficient to predict weaning performance and that vitality at birth is a very important criteria.

Lallemand has looked into this topic for some years now and, back in 2008, a vitality scale was designed by the company and further validated by thousands of measures.

Between 2009 and 2010, a large field survey was undertaken on five commercial farms in France and Canada, using this scale to evaluate the vitality of over 5,200 piglets at birth, together with various parameters.

David Guillou, who is responsible for the Lallemand Monogastric research and development activities, presented the conclusions of this unique meta-analysis, ranking the factors that seem to affect piglet vitality at birth:

- Birth order: first born piglets show higher vitality scores.
- Birth weight: light weight piglets show lower vitality.
- Farm effect: important farm-to farm variations were detected, which are difficult to explain but could be attributed to numerous factors such as genetics, feeding strategies and management.
- Levucell SB: this specific live yeast has a significant effect on vitality at birth, once the results are standardised with regards to the previous factors.

Much research has been done on this product's effect on sows. *S. boulardii* also affects piglet vitality at birth. In order to explain the possible reasons why, David Guillou put all the pieces of the jigsaw together:

- Positive effect on the sow's digestive transit, hence overall well-being and comfort.
- Positive effect on farrowing duration.
- Positive effect on colostrum immune quality.
- Reduction of neonatal diarrhoea.

Antibiotic removal

Another key challenge in pig production today is the removal of antibiotics from piglet feed. Torben Jensen, swine nutritionist for Vestjyllands Andel in Denmark, presented examples of *E. coli* management in piglets with non-medicated feeds.

Indeed, as Dr Helle Kjaersgard, a Danish swine veterinarian, reminded the audience, in Denmark, 40% of antibiotics used are prescribed for gut infection in piglets.

The authorities' willingness to reduce antibiotics in animal production puts growing pressure on pig production; and feeding programs using alternatives such as probiotics are a necessity.

For example, in his program, Torben Jensen uses probiotics (live yeast Levucell

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SB, as well as lactic acid probiotic bacteria (Bactocell) and zinc as alternatives to control contamination.

Mycotoxins

Isabelle Oswald, from INRA in France, focused on mycotoxins in pig feed which are a very significant problem both in animal and human nutrition. According to her experiences, the pig is one of the most sensitive species to mycotoxins. The pig's major dietary components (cereals and corn in particular) are frequently contaminated with mycotoxins, even at low levels.

Mycotoxins are produced by fungus as non-essential metabolites. They are very diverse in structure and properties and exert various deleterious effects on health and performance. The main mycotoxins affecting pigs have various toxic effects and target different organs. However, they all share common effects on the immune system. Isabelle focused on the latter and presented her team's main findings about two modes of action that can help explain how mycotoxins increase the pig's susceptibility to bacterial pathogens such as *E. coli*:

- At gut level, mycotoxins act on the digestive epithelial barrier and increase its permeability to bacterial translocation from the gut to the blood stream.

- A systemic effect in which mycotoxins affect the specific immune response, either cell-mediated or humoral, depending on the toxin.

Due to this deleterious effect on immunity, mycotoxins increase pathogen contamination risks and decrease vaccination efficacy. In order to evaluate Levucell SB's positive effect on immunity, Isabelle conducted a preliminary study on piglets using this specific live yeast in a mycotoxin challenge model.

This showed that this live yeast was able to help in restoring the immune response and to enhance vaccination efficacy.

Vaccination performance

Dr Helle Kjaersgard gave a deeper insight into vaccination performance, which she felt was a key issue to help reduce antibiotic usage. She showed that not all piglets respond equally to vaccination.

When the immune system is weakened, vaccination is less efficient; productivity and pig health are at risk. Immunity can be weakened by several factors, such as mycotoxins, as discussed earlier, but also, by certain eating disorders, chronic diseases, other infections, or even stress. Dr Kjaersgard advocated the use of economic tools to monitor piglets' growth and vaccination efficacy.

According to her, based on the Danish experience, there is room for improvement, in particular through optimisation of weaning management, and a rational use of medicines and vaccines based on improved diagnostics. In this context, based on all the data presented during the meeting, Levucell SB appears to be a good tool to help achieve this goal.

Field experience

In order to link back the science and theories to the field, the meeting was concluded by Henning Dejgaard, a Danish pig farmer who has been using Levucell SB on his farm for 18 months. His 750 sows are fed liquid feed. One of the farm main problems was gilt diarrhoea. The farm uses a very low level of medicines and is keen to keep it this way. After several unsuccessful trials in the past, Henning wanted to try again, in January 2012, to tackle the gilt diarrhoea problem.

After a 4-6 month period of adaptation using Levucell SB in the sow feed, he started to see the benefits of the new diet.

The diarrhoea has now reached an acceptable level. An interesting side-effect of using this product has been that the mortality rate among sows has dropped from 12.5% in 2011 to 9% in 2012, down to 8% in 2013.

Moreover, production is very stable now and the number of pigs sold has gone up. The first five months of 2013 achieved a new record of 32.7 pigs per sow per year sold. ■