Investing in research to improve swine nutrition and performance

Worldwide, it is crucial for swine producers to optimise production farm management and production means as the swine industry continues to evolve.

by Fabien Guillard, International Swine Market Manager, ADM.
www.adm.com

Providing a sufficient supply of pork remains the top priority within the swine industry today. To do this, reasonable prices for meat are necessary to appeal to consumers. At the same time, managing sustainable margins that enable swine farmers to maintain their businesses is important.

Despite some increase for retailed pork prices observed in some markets, increasing feedstuffs cost has put pressure on margins for swine farmers.

This recent development illustrates how it could be difficult to provide a suitable profitability for farmers while the swine industry maintains suitable prices for consumers.

Feed costs represent approximately 70% of total cost for swine farmers. Swine producers are always carefully looking to optimise nutrition for their herd in order to guarantee better margins.

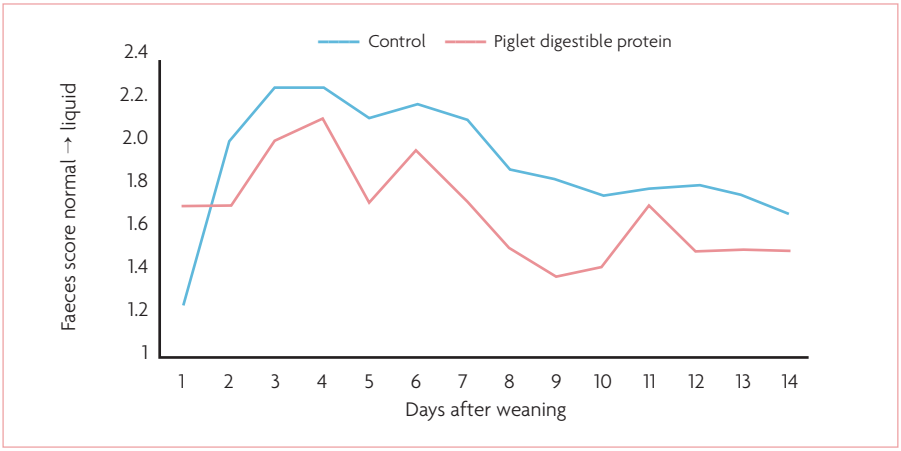
To propose feed optimisation in adequation with sustainable margins required by swine producers, ADM's swine research team collaborates with laboratories globally to develop standardised methodologies to analyse and identify the quality of raw materials.

Once approved by the ADM research team, raw material analysis is transferred into an application developed by ADM: Equadvice. Equadvice translate Near Infra-Red (NIR) or wet chemistry analysis into species-specific nutritional profiles which are then used by formulators to design customised feed formulas.

Swine nutrition must be adjusted as gut maturity differs between piglets, fatteners and breeders. Equadvice evaluates raw materials used for swine diets according to these physiological stages. Notably, during Swine Research Days (JRP 2023 in St Malo, France), the ADM swine research team introduced a new nutrient called 'Piglet Digestible Protein'. Used to qualify raw materials dedicated to piglets' diets, Piglet Digestible Protein represents a powerful asset for swine nutritionists, helping them to design creep feed, pre-starter and starter diets.

ADM swine researchers describe how Piglet Digestible Protein could help design formula for diets promoting better growth performance without impairing piglet gut health. For example, Fig. 1 show piglets faeces quality is improved with pre-starter diets formulated using Piglet Digestible Protein.

Fig. 1. Piglet digestible protein.



High-prolific sows

Another way swine producers try to lower their production costs is with high-prolific sows. Depending on the context, increased sow productivity may be associated with a higher prevalence of weaker piglets.

Considering this important challenge, recent ADM research was published showing promising results illustrating how Citristim (an innovative biotics strain composed of Pichia Guilliermondii yeast) fed to sows could support an increase in litter weight at weaning, as well as an increased litter size at birth due to a decrease of piglet mortality over the suckling period.

This experiment has demonstrated that swine producers could rear fewer weak piglets thanks to a lower proportion of lightweight piglets (less than 800g) at birth with Citristim included in sows' diets.

Additionally, the ADM swine research team

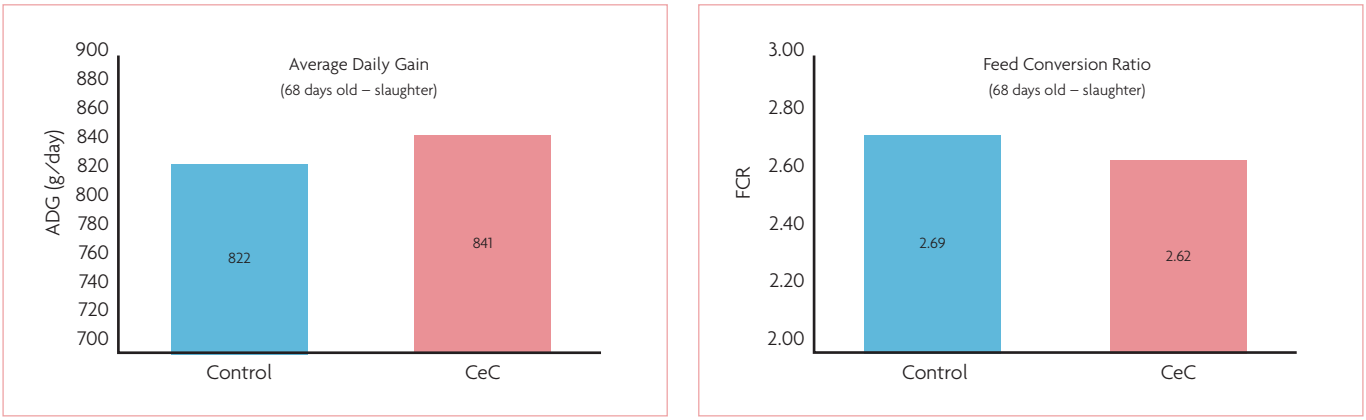


Fig. 2. Improved Average Daily Gain and Feed Conversion Ratios from 68 days old to slaughter.

began an extensive research project aiming to prevent iron deficiency anaemia for sows and piglets, while improving well-being and biosecurity for piglets. This project, which is piloting the development of an oral solution for piglets, appears to be a promising option.

Reducing environmental footprint

Besides lowering production costs, improved feed efficiency allows swine farmers to overcome other important challenges, including reducing the environmental footprint of swine production.

To tackle this challenge, several projects have been recently launched by ADM to improve FCR, and thus reduce land use and soil pollution. For instance, in January 2022, the ADM research team introduced a trial using its B-Safe solution, a patented feed additive combining synthetic clays and copper.

In this experiment, B-Safe demonstrated an improved FCR over the fattening period from 30kg to slaughter. Results highlight how B-Safe could help regulate gut microbiota and thus support pigs to become more efficient to valorise feed nutrients.

Complementary to this project, ADM's swine research team is also planning to publish some additional experimental results demonstrating how a combination of bioactives, such as Xtract 6930, could improve feed efficiency thanks to an increase of endogenous enzymes' activity involved in digestion and absorption.

The swine industry has been also frequently challenged about its responsibility for soil pollution, especially due to the release of trace mineral through manure.

Recent regulatory evolutions related to zinc and copper concentration in piglets' diets should help the swine industry overcome this challenge in Europe and Asia.

When working to reduce the concentration of trace elements in pigs' diets, researchers also worked to address the substitution of pharmacological dosage of zinc oxide, as well as increased bioavailability for trace minerals to improve sows' nutrition.

Over past months, ADM's research team has been able to identify several combinations of feed additives (such as plant extracts, acidifiers) that successfully replaced zinc oxide at 2,500ppm in piglets' diets.

These results are currently under review. A recent study also highlighted that B-traxim (an organic trace mineral) may increase swine fattening performance while minimising soil pollution thanks to its improved bioavailability.

Providing suitable environment and nutrition

Another important challenge for swine industry remains to provide a suitable environment and nutrition to their pigs in order to support animal well-being. Regulation has evolved in past years in some countries and tend to limit some operations such as castration, tooth clipping and tooth grinding.

Discussions are ongoing in the EU to assess the feasibility of banning tail docking in pigs, however, this may increase the frequency and severity of tail biting. ADM's research team has implemented an experiment to investigate the potential of nutritional solutions to lower the risk of tail biting.

Conclusion

Modern animal nutrition is extremely technical and precise across species. The animal's nutritional requirements are calculated to optimise performance while minimising cost and environmental impact.

To support the swine industry to successfully tackle current and new challenges, ADM will continue to invest in research and development for innovative swine nutrition solutions. ■