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How to balance sustainability & competitiveness in swine production

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In Brief

- Global market trends highlight consumer and regulatory demands as the main downstream players setting targets for future sustainable swine production
- Swine feed contributes significantly (62%) to the carbon footprint of swine production, emphasizing the importance of reducing reliance on high carbon footprint feed ingredients
- Strategies to lower feed carbon footprint include adopting alternative protein sources, minimizing soy use, and incorporating locally grown raw materials while addressing challenges like fiber, mycotoxins, and anti-nutrients
- Change can only start by understanding where the journey begins and with the new Sustell™ intelligent sustainability service measuring environmental footprints coming from feed and production, tangible metrics can be measured and used to encourage collaboration across the value chain

Global market trends towards sustainable pork production

The pork value chain is largely influenced by downstream players namely consumers and retailers who set the targets for the upstream players to meet. Consumers are demanding more eco-friendly, ethical, and sustainably produced foods. Retailers are responding by setting targets that swine producers must contribute to if they are to remain competitive. Regulators have also put sustainability firmly on the agenda for example in Europe with the evolution of the EU Green Deal and Farm to Fork Strategy. The global population is expected to continue to rise and reach 9-10 billion people by 2050. While cereals and other plant-based food continue to occupy a significant proportion of the consumer plate, there is a growing need to increase the supply of animal protein by 60%, which will require more land area. The swine industry has already begun to adapt to meet the requirements of this new more sustainable landscape with many companies committing to Science Based Targets Initiatives (SBTI) to achieve target reductions in Scope 3 emission or other targets in the medium to long term.

Practical approach to reducing the carbon footprint of swine production

Swine feed accounts for as much as 62% of the carbon footprint of a kilogram of pork.

The major contributors to this are conventional cereal and oilseed ingredients (corn, wheat, barley and especially soybean-meal) as shown in Figure 1. Therefore, feeding pigs with a lower carbon footprint diet will already have an impact on a swine producer's environmental footprint.

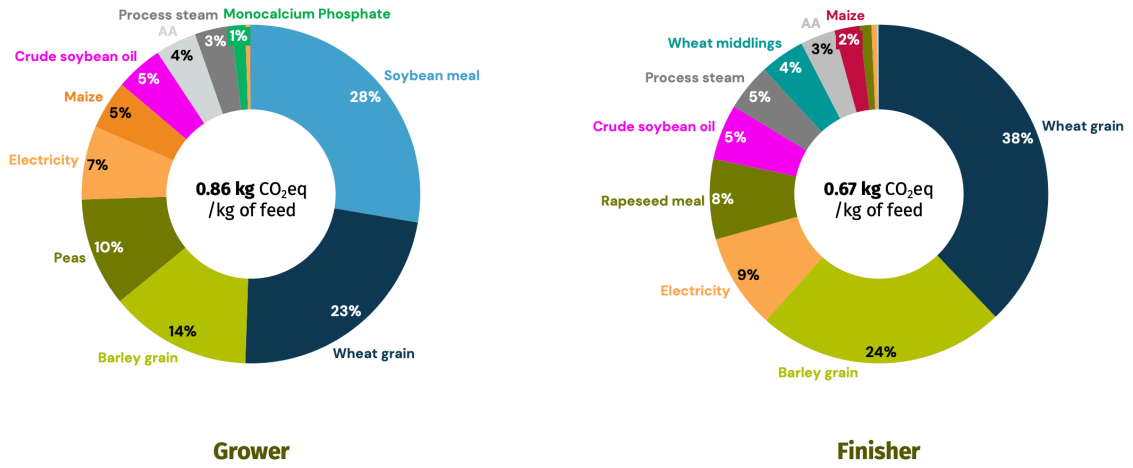

Figure 1. Percentage contribution of each ingredient to the total estimated carbon footprint (expressed as CO_2 equivalents per kilogram of feed) of a typical grower and finisher pig diet in Benelux *(Source: dsm-firmenich).*

Soybean meal commonly used as a protein source for pigs can have a substantial environmental impact based on where it originates from. Soybean meal from Latin America for instance, has a very high carbon footprint due to the impact of land use. So much so that new legislation will require soy or soy products being sold in the European market to demonstrate proof of origin from non-deforested land by the end of 2024.

Therefore, one of the strategies that can be adopted to reduce the carbon footprint of feed is to reduce reliance on soy-based protein from deforested land but also reduce the need for soy overall. Lowering the crude protein content of feed and meeting the amino acid requirements of the animal by using synthetic amino acids where cost-efficient, not only negates the need for so much protein meal but also reduces the nitrogen emissions from the system. In addition, incorporating protein from other non-human edible raw materials such as sunflower, rapeseed meal, field peas, etc. that are grown locally and/or non-traditional raw materials such as insect meal and algae protein will reduce the environmental impact of pig feed. The European pig diet is becoming more diverse as a result however, the incorporation of alternative raw materials brings some additional complexity in the form of more fiber, indigestible protein, mycotoxin, and anti-nutrients that all need to be considered.

To facilitate the transition towards more sustainable swine production, a comprehensive approach is needed to manage all aspects of the production system from the feed to animal performance and the management of the manure. Clearly, this approach will require a collaborative ecosystem of stakeholders including feed manufacturers, additive suppliers, experts on manure management, veterinarians, nutritionists, and retailers to name a few from all across the value chain all working together to achieve this goal. Producers must also have effective means to measure their carbon footprint in the first place.

dsm-firmenich is a company committed to supporting the swine industry to become more sustainable in a proactive way. Sustainability is in our DNA at dsm-firmenich and our business is driven by a focus on 6 main drivers including 1) helping tackle antimicrobial resistance, 2) making efficient use of natural resources, 3) reducing reliance on marine resources, 4) reducing emission from livestock, 5) improving the lifetime performance of animals and 6) improving the quality of food and reducing waste. dsm-firmenich has a long history of supporting more sustainable swine production with our dedicated nutritional approaches to unlock the digestive potential of raw materials while minimizing N emissions with our feed enzyme portfolio. Our unique and innovative approach to mycotoxin risk management ensures that our customers know the risks they are facing when incorporating alternative raw materials into their formulation and the precise strategies that need to be taken to mitigate those risks. Our gut health portfolio, together with our special nutrients ensures that pigs are getting the support they need to perform at their best in the face of challenge.

With our intelligent sustainability service, Sustell™ that allows for a precise and credible calculation of feed and farm environmental footprint, we are able to help feed and pork producers measure their current environmental footprint and work together to reduce it through the use of our own extensive expertise and our comprehensive portfolio of solutions and services.

Our approach focuses on three main areas

Our experts work closely with you to shape a strong future for your business following a stepwise approach.

1. Start with a thorough assessment of your operations, creating a roadmap to turn challenges into opportunities with Sustell™. It allows for a precise and credible calculation of feed and farm environmental footprint unlocking sustainability's value, providing practical, science-based solutions for your business goals.

2. Set the sustainability targets to your operations

3. Assess what current strategies are available to make a tangible difference starting with feed as it usually corresponds to 62% of footprint
    a. Reducing crude protein levels by using synthetic amino acids and RONOZYME® ProAct
    b. Get maximum value from alternative raw materials, typically higher in fiber, indigestible protein, antinutrients, mycotoxins

i. Understand the different fiber fractions, phytate and protein composition with NIR technology and how much nutrients such as energy, phosphorus and amino acids can be extracted by using tailored enzyme soluitons among different raw materials (RONOZYME®)
ii. Understand the quality & risk through analysis of raw material composition & screen for mycotoxin risk with Spectrum Top® 50
iii. Deactivate mycotoxins from feed with Mycofix® portfolio

4. Assess what current strategies are available to make a tangible difference in pig performance and emissions.

In response to global demands for sustainable pork production, the swine industry is adapting to address environmental concerns. Key strategies include reducing reliance on high-carbon soy-based feed, incorporating alternative raw materials, and fostering a collaborative ecosystem across the value chain. dsm-firmenich plays a proactive role, leveraging its new intelligent sustainability service Sustell™ for precise and credible calculation of feed and farm environmental footprint. Our approach, spanning feed enzymes, mycotoxin risk management, and innovative ingredients like VevoVitall®, will help you save costs, and get the most value from locally sourced raw materials while reducing environmental emissions, all without ever compromising on performance.

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