

The (SFIS) Project - Specialty Feed Ingredients contributing to Livestock Sustainability

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Dr. Michael Binder

Chairman Technical Board SFIS-Project
-A joined IFIF-FEFANA Initiative -

Introduction:

Livestock production is recognized as a significant source of emissions in the environment in a liquid, gaseous or solid form. These environmental impacts can be mitigated by adopting modern feeding management measures. The use of Specialty Feed Ingredients (SFI) in animal nutrition for example is a valuable contribution to mitigate the environmental impact of animal production, by reducing the excretion of certain nutrients (nitrogen (N), phosphorus (P)), improving the performance of the animals, reducing the feed consumption or allowing the use of locally based or unusual feed ingredients such as co-products from food production or food processing. The presented results of the recently finalised study outlines in which way SFIs improve livestock sustainability, based on an investigation conducted by the joined IFIF-FEFANA SFIS-project.

Abstract:

The SFIS joint project of FEFANA (European Association of Specialty Feed ingredient producers) and IFIF (International Feed Industry Federation) endeavours to establish the contribution of Specialty Feed Ingredients (SFIs) to mitigating the environmental impact of livestock production. The goal of this study was to conduct a Life Cycle Assessment (LCA) in conformity with the ISO 14040/44 standards in order to analyse the cradle-to-farm exit gate environmental performance of pig and broiler production systems in three representative regions worldwide (Europe, North America and South America) with and without the use of SFI. The supplementation of compound feeds with SFI such as amino acids and enzymes like phytase is the state of the art technology in modern livestock production to fulfil the nutritional requirements of animals and close the nutrient gap in the most precise way

The scope of the present study is a “cradle-to-farm exit gate” LCA. The Functional Unit (FU) is the live weight of animals (pig and broiler), when leaving the farm. The study encompasses three regions (Europe, North America and South America). The study provides a comparison of the environmental profile of livestock productions systems, when diets include SFI or not. Three (3) diets have been tested for pigs and broilers respectively. A set of environmental impacts (Global Warming Potential - GWP; Acidification Potential - AP; Eutrophication Potential - EP) is used. In a multi-step approach, the use of feed additives shall be established as measure to improve feed conversion, animal welfare and reduce the effects of livestock husbandry on the environment. Data collection, data inventory and data assessment are conducted based on a multi-impact model (GHG, EP, AP, ED, RD and LUC). For that purpose in a first step enzymes (phytases) and amino acids (methionine, lysine, threonine and tryptophan) are identified as those feed additives with the most relevant and significant impact as well as with the best database available for establishing a unique assessment method for setting product category rules (PCRs) for SFIs.

Following the structure of the comparative LCA approach, two different options for the production of 1.0 kg of pig or poultry live weight will be compared in the LCA approach of the SFI project. Option one, which is also the basic scenario, is the production of 1.0 kg of pig or poultry live weight by using a compound feed without any supplementation of SFIS. This scenario is then compared with the production of 1.0 kg of pig or poultry meat based on a compound feed that has been supplemented with either amino acids or phytases. Although the common practice in many regions is the use of both products in the same feed, it seems

more effective in the perspective of ISO to demonstrate the pure effects of the single SFI on the environment by assessing them separately.

The study clearly demonstrates that the supplementation of animal feed with SFI is significantly beneficial for the impact categories Acidification Potential (AP) and Eutrophication Potential (EP), valid for pig and broiler production systems in all regions investigated. However, the contribution to reduce the Global Warming Potential (GWP) is much more complex and must be analysed more differently. For example, broiler production systems in Europe and South America show significant environmental improvements for the GWP impact category, but not in North America. In the assessed pig production systems significant improvements for the GWP impact category could only be identified, when direct Land Use Change (dLUC) emissions were considered.

References:

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