ADISSEO
A Bluestar Company

Case Study

Environmental Return on Investment (EROI) of feed additives

Overview

Life Cycle Assessments (LCA) until farm gate highlights the role of feed additives in mitigating climate change through notably improved feed efficiency or better use of feed ingredients. However, climate change impact of their production can be higher than other feed raw materials (e.g. cereals). The Environmental Return On Investment (EROI) evaluates the balance between the carbon footprint benefits of using feed additives at the farm level and their production impact. EROI was calculated as the ratio of the carbon footprint avoided at the animal product level to the impact generated by additive production at the plant level, using LCA for both.

Impact

Results with internal studies showed the EROI reached 36, 50 and 115 for 3 digestibility enhancers tested in broilers and shrimps, and 91 for a rumen-protected methionine (RPM) tested in ruminants. This means that for an investment of 1 t CO_2eq due to feed additive production, their use in these studies resulted in savings of 36t, 50t, 91t and 115t CO_2eq on the value chain. The EROI concept can be enlarged to any study, as long as both LCAs from cradle to plant gate (impact / kg product) and to farm gate (impact / kg liveweight animal or animal product) were performed following recognized guidelines.

EROI allows to understand in a simple way the environmental benefits of using feed additives, as the current economical return on investment. It also allows to tackle which additives have a too high carbon environmental impact of production compared to their benefits at farm gate and can drive Ecoconception to either reduce the carbon environmental impact of production of these products or improve their benefits at farm gate to be more sustainable for the entire value chain.

Supporting Materials:

- Amino Acid Balancing of French Dairy Ration Reduces Carbon Footprint
- 2022 ADSA® Annual Meeting Abstracts
- Lowering the Carbon Footprint of Shrimp Production
- Book of Abstracts of the 76th Annual Meeting of the European Federation of Animal Science

*This sustainability-related case study was provided by **Adisseo**.*

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