

Avoiding Greenhouse Gas Emissions The Essential Role of Chemicals



Broiler production with feed additive DL-Methionine

A Sumitomo Chemical Co. Ltd. case study



Since methionine is the first limiting amino acid in broiler feed, the supplementation with DL-Methionine plays a key role to reduce nitrogen content in broiler feed.

Reducing the nitrogen content in the feed is an effective way to reduce nitrous oxide (N₂O) emission - which has a greenhouse effect around 300 times greater than carbon dioxide - during manure management process, by decreasing nitrogen excretion of the animals.

In this case study, two options for broiler feed with different protein contents are compared in life-cycle GHG emissions: a study feed supplemented with DL-Methionine and a control feed without DL-Methionine. Both feeds satisfy the nutrient requirements of the animal for adequate growth.

The life cycle assessment case study shows that, while having a slightly higher impact in the raw material production, supplementing feed with DL-Methionine results in avoided emissions over the life cycle as a result of reduced nitrogen excretion. The estimated contribution of the studied feed to GHG emission reduction amounts to 0.114 kg CO₂e per kg of broiler meat, based on the difference in life-cycle GHG emissions between the two feed options.

The overall contribution to GHG emission reduction in Japan is forecasted to amount to 161.77kt CO₂e in 2020.

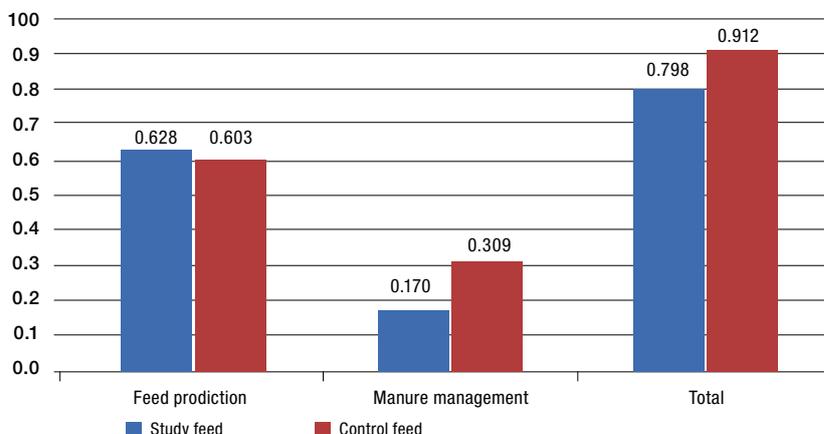
Full study available at: www.icca-chem.org/energy-climate



GHG emission and reduction contribution (kg-CO₂e/Kg-Broiler meat)

Control feed - Study feed =
0.114 (kg-CO₂e/kg -broiler meat)

Study feed vs Control feed
CO₂equiv. emission on production
and manure management step
and that discrepancy



This case study illustrates how the reduction of greenhouse gas (GHG) emissions can be enabled by chemical products, as part of a series of case studies brought to you by ICCA. Chemical industry members offered Life Cycle Assessment [LCA] case studies for the purpose of showing illustrative examples on how to calculate avoided greenhouse gas emissions. The avoided emission calculations were based on the guidelines developed by ICCA and WBSCD (World Business Council for Sustainable Development) - Chemical Sector, with the support of Arthur D. Little and Ecofys. Other life cycle environmental impacts such as water and land use change were outside the scope and usually not considered.

