

Title: Environmental Assessment of an Egg Production Supply Chain using Life Cycle Assessment

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A Life Cycle Assessment model was used to provide a review of the efficiency of Australian egg production with respect to greenhouse gas emissions, water use and energy use. The study shows that Australian egg production is a highly efficient form of protein production with demonstrably less impact on the environment, when considering Greenhouse Gas Emissions, water and energy usage, than egg production in other countries.

Summary

The Australian egg industry commissioned the Life Cycle Assessment study with the objective of quantifying the most important environmental and resource impacts faced by the industry (water and energy use and Greenhouse gas emissions). The study also aimed to determine key areas in the egg supply chain where improvements can be made to reduce resource usage and environmental impacts, as well as identifying areas for further research.

In their report, *Environmental Assessment of an Egg Production Supply Chain using Life Cycle Assessment*, authors S.G. Wiedeman and E.J. McGahan, used the ISO 14040:2006 Lifecycle assessment framework to investigate both caged and free range egg production through to the end of the primary production supply method.

The findings of the study demonstrated that Australian egg production generates lower levels of greenhouse gas (GHG) than European operations, based upon comparisons with readily available studies. This can be attributed to the high performance levels of the Australian industry combined with the low input nature of production. Egg production is the lowest emitter of GHG compared to any other proteins. Caged production delivered the lowest GHG emissions; cumulative energy demand was also lower than for free-range production.

Feed grain production and use produced the largest impact, followed by on-farm water and energy use and manure management. The authors believe it is therefore a natural conclusion that mitigation strategies and efficiency measures that reduce feed use would be highly beneficial to the industry. It is however anticipated that the high degree of feed efficiency to date will make it difficult to achieve substantial further gains. Reducing farm electricity use is another attractive mitigation strategy that will lead to lower energy use, lower GHG and lower costs, provided that production levels can be maintained.

The report provides the first insight into the high efficiency and potential sustainability of Australian egg production. Further work is needed to capture a broader spectrum of egg producers from other production regions and to further investigate manure management and emission factors to improve estimation methods, the authors state.

While the Australian egg industry already manages its environmental responsibilities proficiently, there is still scope for wider adoption across production regions and refinements to current practices which will allow for further improvements.