ENVIRONMENTAL IMPACT OF USING A YEAST POSTBIOTIC IN BROILER PRODUCTION

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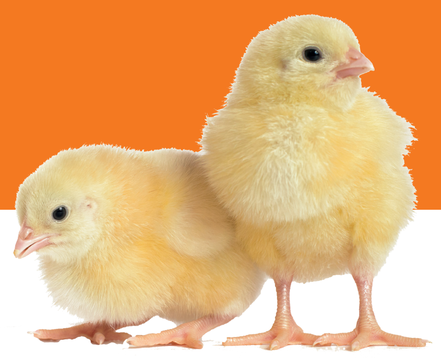

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INTRODUCTION & OBJECTIVE

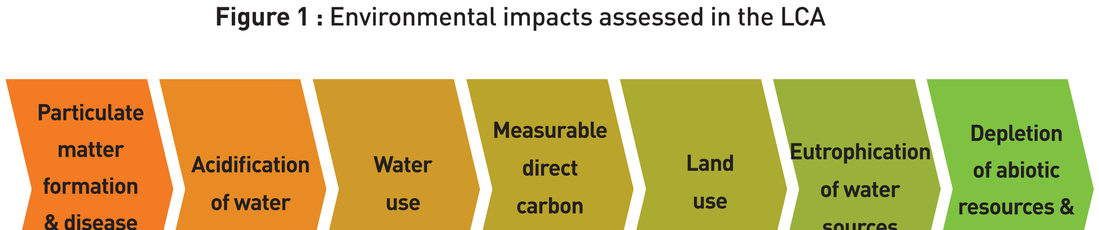
Poultry meat is a key source of affordable protein, but its expanding production, projected to grow 1.4% annually by 2030[1] ,raises environmental concerns.

This study used Life Cycle Assessment (LCA) to evaluate the climate impact reduction of a yeast-derived postbiotic (rich in mannans and ß-glucans; Safmannan®), known to improve feed efficiency and reduce pathogen loads, particularly *Clostridium perfringens* and *Salmonella spp*[2]. Data from trials under *C. perfringens* challenge and heat stress were integrated to assess its mitigation potential & determine the postbiotic's effect on climate-related outcomes.

MATERIALS AND METHODS

To evaluate carbon equivalent emissions, a **LCA** was conducted—from **crop cultivation** to **feed manufacturing**, ending with the **production of 1 kg live broiler weight**. Environmental impacts were assessed using the EF3.1 method3, endorsed by the European Platform on LCA.

Figure 1 : Environmental impacts assessed in the LCA



The study included six combined trials:

- **Three biotic (*Clostridium perfringens*), and**
- **Three abiotic (heat stress),**

Designed to assess the environmental impact of these stressors and the mitigation potential of a yeast postbiotic (Safmannan®, Phileo by Lesaffre, France).

Each challenge included:

- **a control group** (stressed, non-supplemented), and
- **a treatment group** (stressed, postbiotic-supplemented).

RESULTS

Figure 2 : Assessment of carbon footprint reduction in broilers supplemented with Safmannan®

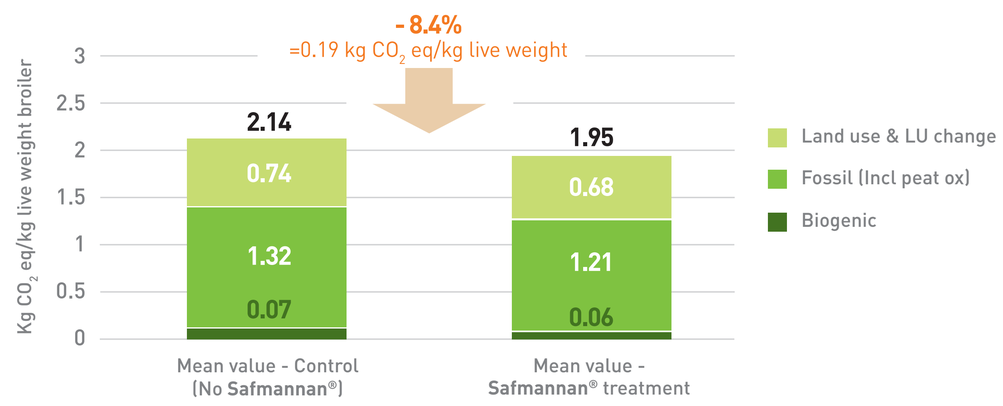


Figure 3 : Change in feed conversion ratio (FCR) between groups in trials with and without Safmannan®

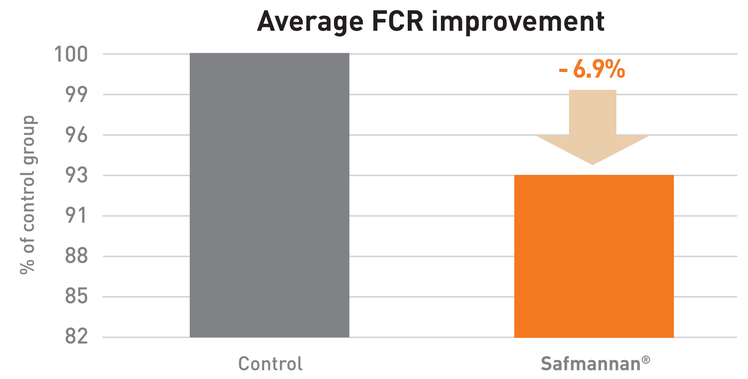
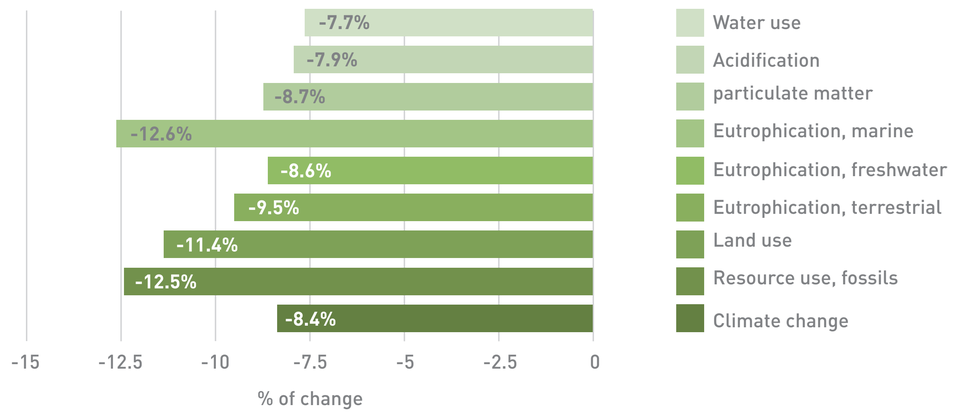


Figure 4 : Average improvement in key impact categories between challenged trials with & without Safmannan®



CONCLUSION

Broiler production systems face multiple stressors, such as pathogenic pressure (*Clostridium perfringens*) and heat stress, which negatively impact FCR and, consequently, increase carbon emissions. In this study, both challenges significantly raised the carbon footprint in unsupplemented control groups.

Postbiotic supplementation enhanced broiler resilience, improving FCR, reducing water use and lowering carbon footprint. By reducing feed consumption and associated land and water use, the postbiotic aligns with the people–planet–profit sustainability pillars.

Find all this information by scanning the QR code.

REFERENCES

1- FAO. Guidelines for Assessment (Review). Rome, Italy (2019)

2- Posadas, G. A. et al. Translational Animal Science 1(1): 60–68 (2017)

3- Bassi et al. Publications Office of the European Union, Luxembourg (2023)
® Safmannan carbon footprint = 1.3 kg CO_2 eq./kg

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