PRESS RELEASE

SUSINCHAIN Scientific Publications

A modular environmental and economic assessment applied to the production of Hermetia illucens larvae as a protein source for food and feed

The article **"A modular environmental and economic assessment applied to the production of Hermetia illucens larvae as a protein source for food and feed"** was published in ***The International Journal of Life Cycle Assessment (2021) 26: 1959–1976 (2021)*** **by Raphaela Spykman, Sayed Mahdi Hossaini, Daniela A. Peguero, Ashley Green, Volker Heinz & Sergiy Smetana** in 2021.

The study presented in the article aimed to give an analysis of environmental and economic impacts of insect production to identify the most eco-efficient production scenarios.
The authors of the article highlight on the significant role of the insect protein as a promising solution to ensure future food security and mitigate negative environmental impacts related to food production. It is also noted that producers need a decision-support system to ensure the sustainable upscaling of the sector.
What makes research important is a novel modular eco-efficiency assessment approach developed to analyze the production of dried Hermetia illucens larvae. Authors disaggregated an exemplary, industrial-scale insect production system into a total of 29 module variants that can be combined into 4608 distinct production scenarios, which are characterized by different feeds, energy efficiencies, and processing technologies. Environmental life cycle and cost assessments were conducted for each module variant, while eco-efficiency assessment was utilized to evaluate sustainability in terms of both environmental and economic dimensions. Furthermore, the impact of insect feed on production system performance and environmental footprint was examined by employing feed-specific scaling factors. These factors were employed to aggregate module results into production scenario outcomes.
The results of the studies showed that the most environmentally and economically efficient production scenarios were characterized by energy-efficient rearing facilities that utilized blanching and microwave drying for processing. The choice of insect feed was found to be the primary contributor to both environmental impacts and costs. However, from an eco-efficiency perspective, the specific feed option may not be critical.
The researchers came to the conclusions that the developed method of determining eco-efficiency based on cost-analysis and modular life cycle assessment tested in the study demonstrated to be efficient in assessing multiple potential insect production scenarios.

The article can be accessed online at the journal website or the SUSINCHAIN project website along with other scientific publications.

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