PRESS RELEASE

SUSINCHAIN Scientific Publications

A Review of Pretreatment Methods to Improve Agri-Food Waste Bioconversion by Black Soldier Fly Larvae

The article **"A Review of Pretreatment Methods to Improve Agri-Food Waste Bioconversion by Black Soldier Fly Larvae" by** Daniela A. Peguero, Moritz Gold, Dries Vandeweyer, Christian Zurbrügg, and Alexander Mathys This article was submitted to Waste Management in Agroecosystems, a section of the journal Frontiers in Sustainable Food Systems in 2022.

The review presented in the article meets the request for solutions for increasing food and intensifying the challenges related to agri-food waste management. As one of the innovative approaches to recover the resources lost along the production chain, the use of the larvae of the black soldier fly (BSFL), Hermetia illucens L. was mentioned, and its ability to grow and convert a wide range of organic waste materials into insect biomass.

The paper published aimed to provide a state-of-the-art review on the potential pretreatment methods that may improve the digestibility of substrates by BSFL and consequently the production of BSFL. Physical (e.g., mechanical and thermal), chemical (alkaline treatments), and biological (bacterial and fungal) treatments were included to these processes.

The article discusses how mechanical, chemical, and biological pretreatments may improve the black soldier fly larvae's (BSFL) ability to bio convert lignocellulosic substrates. Authors mention these pretreatments have the potential to increase the effectiveness of BSFL digestion, much like composting and anaerobic digestion.

The authors suggest that further efforts should concentrate on creating general, substrate-specific process guidelines that take into account elements like particle size, temperature, and chemical dosage. It also stresses how crucial it is to comprehend pretreatments' impacts on the BSFL digesting process in greater detail. As well, researchers suggest the future studies should examine how to improve the pretreatment procedure and how chemical pretreatments affect subsequent processing, such as the quality of feed and fertilizer products obtained from BSFL rearing.

The article's conclusion underlines the potential advantages of mechanical, chemical, and biological pretreatments in boosting the efficiency of BSFL's bioconversion of lignocellulosic substrates. In order to properly comprehend the consequences and viability of these pretreatment procedures in the production of BSFL-based products from agri-food wastes. The review made paves a further path for additional study, process optimization, and thorough analyses.

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

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