



Conversion of organic residues to insect biomass

Madebymade is a German company that converts agricultural organic residues into insect protein for pet food and livestock feed. The conversion process is accomplished through a farming operation of black soldier flies, where flies are fed organic residues and fly larvae are harvested and processed into both protein products and fat and fertilizer by-products. Operations are focused on obtaining organic residues from regional supply chains in order to both prevent the residues from becoming waste and create a regional circular economic model for providing animal feed. Operations are also designed within a modular system (based on international shipping containers) and are located on an area of over 2500m², where insect production is steadily increasing.

The main end-product is a created protein flour generated during pressing of the larvae. It has diverse methods of utilization in the feed industry, with an approximate protein content of over 40% and a fat content of less than 8%. Other main products include the unprocessed living and dried larvae, which can be utilized for feeding suitable livestock and pets. Additionally, the processing of larvae creates lipids with approximately 30% unsaturated fat, as well as larvae excrement that is processed into organic fertilizer and soil conditioner.

The conversion of organic residues into insect protein provides a lucrative business model that can be expanded to include industrial organic residues and insect protein for human consumption. Madebymade's modular design of plant operations provides a low initial cost and decentralized, transferable design that can be implemented in any climate and incorporated into existing agricultural facilities. The implementation of such a production site will allow farmers to produce regional livestock feed and avoid GHG emissions related to long transportation of imported feed.



*madebymade Insect Biomass
(Photo by Natalie Färber)*

KEY WORDS

Insect biomass, organic residue, protein conversion

COUNTRY

Germany

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ADDITIONAL INFORMATION

Global demand for animal protein is increasing due to both global population growth and increases of meat consumption. This increase in demand presents logistical and sustainability problems for the production of livestock that will be consumed as meat, i.e., conventional methods and sources for feeding livestock (such as soy and fish meal) will not be able to successfully accommodate for growing demand and will create worsening environmental problems in their efforts to do so. Examples of such environmental problems include overfishing and loss of biodiversity due to the increasing demand for fish meal, as well as the clearing of forests for the cultivation of soy. Insect protein production provides an alternative protein source that uses less water, space, and food resources than soy and fish meal production, and therefore, its utilization is considered essential for satisfying future demands in livestock feed. Furthermore, the utilization of insect protein also provides a more efficient protein source for human protein consumption.

The creation of madebymade is the central part of the Waste2Protein project, which focuses on the creation of a pilot plant for insect protein production that provides a more sustainable and environmentally friendly alternative to fish and soy meal for animal feed. The project is partially funded through the EU's LIFE program, the EU's instrument for environment and climate action.

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ABOUT BRANCHES

BRANCHES is a H2020 "Coordination Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agriculture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.



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THE PARTNERSHIP

