



Step-by-Step Guide to Bioconversion of Organic Waste

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Topics: Organisation & Staff | Water & Development

Conversion of organic waste into valuable products is becoming more widespread, particularly in low- and middle-income countries. The treatment of waste by larvae of the black soldier fly (BSF) has especially raised much attention in recent years. Despite these advances, a significant need existed for guidelines on how to set up and operate a commercially viable treatment facility. The Black Soldier Fly Biowaste Processing: A Step-by-Step Guide published in July 2017 summarises the results of ten years of research and development in this field at Eawag and imparts valuable know-how through practical advice and instructions.

Biowaste is rich in nutrients and is an ideal source of food for insects, in particular for black soldier fly larvae. These larvae can reduce the mass of biological waste by 50 to 80 percent within 14 days, and, in turn, larvae bred in this way offer an excellent source of protein that can be used as animal feed. In contrast to conventional feed, which contains primarily fish meal or soya as a protein source and thus is problematic in view of global overfishing and the huge demand placed on land and water resources for soybean production, insect larvae represent an ecological and sustainable alternative.

The research team from the Eawag Department Sandec (Department of Sanitation, Water and Solid Waste for Development) have established a pilot research facility for reutilising biowaste in Indonesia's second largest city, Surabaya. This kind of facility is well suited for villages and towns with decentralised waste collection centres, and can basically be set up anywhere when adapted to local conditions, such as climate, available materials, etc. It is less suitable for individual households because, as emphasized by BSF specialist and co-author of the Guide, Stefan Diener, it is important to collect a minimum amount of waste (at least five tonnes per day) for larvae food.

The Step-by-Step Guide is the culmination of Stefan Diener's research activity to date at Eawag. From October 2017, he will be embarking on a new career challenge with the Biovision Foundation in Zurich, focusing his activity on biological pest control in East Africa. Following his departure, Moritz Gold will advance the black soldier fly research in Dübendorf as the subject of his PhD thesis. Meanwhile, Bram Dortman's team continues to optimise the pilot facility in Indonesia, while keeping the ever-growing black soldier fly community up-to-date with the latest knowledge through regular training sessions.

Related Links

Information about Black Soldier Fly Biowaste Processing Project at Eawag

Black Soldier Fly Biowaste Processing – A Step-by-Step Guide

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<https://www.eawag.ch/en/info/portal/news/news-archive/archive-detail/step-by-step-guide-to-bioconversion-of-organic-waste>