



Small-scale Residue Utilisation Pathways (SSRUP) Black Soldier Fly

Description

The type of mobile integrated biorefineries developed in DIVAGRI are Small-Scale Residue Utilisation Pathways (SSRUP) for High-Value Products. They can produce a range of high-value products such as biofuels, fertilizers, animal feeds, and non-synthetic fertiliser. By utilising waste materials and turning them into valuable products, these biorefineries contribute to a more sustainable and circular economy.

Benefits

- Converts organic waste into valuable protein, contributing to a more circular economy
- BSF larvae provide essential nutrients, promoting faster and healthier fish growth.
- BSF larvae production yields frass as an organic fertilizer (compost) for soil improvement.

Challenges

- Consumer acceptance of Black Soldier Fly as a source of animal feed
- Still costly when compared with some other sources of animal feed like fish meal
- Difficult to determine optimal larval density level

Country Example: CSIR, Crop Research Institute, Ghana

The larvae of the black soldier fly (BSF) show great potential for fish production and livestock feed. A pilot study was initiated at the CSIR-CRI to assess the practicality of cultivating BSF larvae as a supplement to conventional catfish feed. The BSF structure was constructed by laying cement blocks up to window level and then cladding it with bamboo and fibre netting and a mostly transparent roof. A "dark cage" and a "love cage" were created for breeding and egg laying. The dark cage provided low-light conditions mimicking the flies' natural habitat, while the love cage encouraged mating. Adult BSF are attracted using decomposing organic waste. BSF mate and lay eggs. Eggs hatch after 4 days and larvae are produced. The larvae are harvested and stored as feed.



BSF Dark Cage joined to the Love Cage



BSF Larvae



An Adult BSF

Knowledge Sharing Centres

Below are the contact persons for country specific questions. Please refer to them or the Coordinator from Hochschule Wismar, for details about the technologies that have been piloted or project research, training, and dissemination activities that are being planned in your region or country. The project runs until May 2025, with Knowledge Sharing Centres established to continue the work beyond that date. More details available on the website <https://www.divagri.org>

GHANA

University of Cape Coast



Dr Francis Kumi
Department of Agricultural
Engineering
Email: francis.kumi@ucc.edu.gh
Telephone: +233 553135913

NAMIBIA

Namibian University of Science and Technology



Dr Veikko Shalimba
School of Engineering
Email: vshalimba@nust.na
Telephone: +264 61 207 2261

MOZAMBIQUE

Centre for Research and Transfer of Technologies for Community Development



Dr Ivonne Muocha
Email: muochaivone@gmail.com
Telephone: +258 21 328616

SOUTH AFRICA

Agricultural Research Council



Dr Aart-Jan Verschoor
Email: aartjan@arc.agric.za
Telephone: +27 12 4279866

BOTSWANA

National Agricultural Research and Development Institute



Dr Pharoah Mosupi
Email: pharoah@nardi.org.bw
Telephone: +267 391 4997

GERMANY

Hochschule Wismar



Mr Sébastien Clerc-Renaud
Email: sebastien.clerc-renaud@hs-wismar.de
Telephone: +49 3841 753 7881

This fact sheet serves as a general overview of the above bio-based technology (BBT). It is one of seven BBT factsheets. It describes one prototype of this technology that was developed prior to 2023. Adaptations of it have been made for the various country and local contexts. Please contact the country Knowledge Sharing Centre for more details. The EU-funded DIVAGRI project (2021-2025), 'Revenue diversification pathways in Africa through bio-based and circular agricultural innovations' seeks to provide African subsistence and smallholder farmers with tools to sustainably improve farm productivity, profitability and resilience through improved management of farming resources, output diversification and creation of high-value circular bioproducts. For more, visit [divagri.org](https://www.divagri.org)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000348.