

Closing the loop: Black Soldier Fly (BSF) technology to convert agricultural waste

BSF Project Update #1

December, 2020.

Overview

The project was established in late 2019 and a range of set up activities required under Milestone 1 were undertaken during 2020, including contract negotiation, intellectual property arrangements, risk assessments, activity work plans, communication & engagement plans, plus committee and working group formations.

The research team was appointed, including PhD candidates and Postdoctoral Fellows, and investigations for the range of research activities were designed, materials and equipment sourced, literature and data collected, and project communication activities commenced, including press releases, scientific conferences and industry meetings.



Image: UWA pot trials; assessing a high quality fertiliser product based on BSF Frass

Communication & Engagement

- ❖ Multiple meetings with key industry representatives, including AFI's Agriculture Round Table in Canberra, 15 October, 2019.
- ❖ Formal presentations have been delivered at scientific conferences and industry events, including:
 - ✓ Australasian Pig Science Association (APSA) 17th Biennial Conference, 17-

20 November 2019, Hilton Adelaide, Adelaide, South Australia.

- ✓ State of Soil Science WA, 4-6 December 2019, UWA Business School, Western Australia.
- ✓ Soil amendment industry forum, 9 July 2019, Brookton, Western Australia.
- ❖ Newsletter articles have been published, including:
 - ✓ The UWA Institute of Agriculture Newsletter, December 2019.
- ❖ Media releases were published:
 - ✓ APL press release "Black soldier fly technology to provide alternate revenue streams to the Ag sector", 2 September 2019.
 - ✓ UWA press release "Developing and assessing a high quality fertiliser product based on black soldier fly frass", 29 November 2019.
 - ✓ Future Green Solutions (FGS) press release "Closing the loop: Black Soldier Fly technology to convert agricultural waste into high quality fertilisers and soil improvers", 27 October 2019.



Image: Wheat experiments with BSF products

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Research Activities

Screening and optimisation of waste streams

- A literature review has been conducted to evaluate different waste inputs in terms of their nutritional value and properties.
- Testing of potentially viable waste streams has commenced.
- Early results show low digestibility of single stream manures, improved digestibility if livestock wastes are mixed and food wastes added.

Economic feasibility, socio-economic costs and benefits, and market evaluation

- Data has been compiled for waste producers in Western Australia and shows where the 'hotspots' are for available waste.
- Waste assessment data has been collated for Western Australia, including the costs of different waste management strategies.
- Ethics applications to undertake interviews and focus group discussions approved.

Assess the biosecurity risks of BSF products (frass and larvae)

- A literature review on the biosecurity risks with BSF products is underway, including obtaining scientific evidence to support the reclassification of the frass to a fertiliser or soil improver.

Assess the environmental risks of BSF products (frass and larvae)

- A literature review has been conducted on the environmental risks with BSF products

Assess the benefits of using BSF frass and/or larvae as a soil improver

- A PhD project titled "Developing and assessing a high quality fertiliser product based on Black Soldier Fly frass" has commenced, with supervisors at the UWA Institute of Agriculture.

Develop a granulated and/or pelletised fertiliser product

- The commercial-scale equipment has been purchased in readiness to produce the product samples.

Develop a slow release encapsulated fertiliser product

- Construction and re-configuration of apparatus, materials selection, and ordering materials has commenced, and gas machines have been upgraded to commercial version.

Public perception

- Industry interviews were conducted to assess a most viable market for insect farming products, and decision made to proceed with commercial markets (e.g. horticulture) as potential end-users.

Next Steps

The team are focused on the analysis of initial trial outcomes and conducting further research, pot trials and lab experiments to improve understanding for a profitable product development. Further data about the waste treatment costs incurred by agricultural producers in Australia will be collected, as well as future market analysis.

Publications

Tascon, A., Dempster, F., Kragt, M. (2021). [Spatial Analysis of Farm Animal Waste in Australia](#). University of Western Australia.

Tascon, A. (Creator) (4 Aug 2021). Spatial Analysis of Farm Animal Wastes in Australia. The University of Western Australia. Excel file available at: [10.26182/r3zp-4j91](https://doi.org/10.26182/r3zp-4j91)

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