

ISSUE 5 · APRIL 2026

ASIFF

Newsletter
Academic Society of Insects as Food and Feed

Welcome to the 5th edition of the ASIFF newsletter!

In this newsletter, you will learn about a two-year project developing a decentralized circular waste management in Pakistan, a new practical tool for cricket farming industry, the INSECt Symposia, learn more from the recent editorial on the term “edible insects”, an event hosted by the Southern California Institute of Food Technologists (SCIFTS) and the Research Chefs Association (RCA), research by ASIFF members, and upcoming ASIFF Annual General Assembly meeting during Insects to Feed the World conference 2026 in Italy.



Read about research of Sofia Katzin on pages 14-15 >>>

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Black Soldier Fly: A Key Pillar of Decentralized Circular Waste Management in Pakistan

Believing that Black Soldier Fly Larvae (BSFL) food waste valorisation method is the heart of decentralized waste management and an effective behaviour change intervention towards waste segregation, another community based simplified **BSFL circular waste model** was tested in Pakistan. The model speaks about an intentionally built community where:

- Waste can be segregated at household level,
- People's opinion comes first in decision making,
- The informal sector 'waste pickers' are officially integrated into the existing system with huge acceptance and respect,
- 100% of the food waste can be retrieved back into the food chain, saving huge costs,
- Organic food production culture is promoted, and soil health becomes priority,
- No food waste goes to landfill, and we all can breathe in methane-free environment.

"A model that could also guide country's policy makers to integrate BSFL farming into existing regulatory framework!"



BSFL rearing facility

“Give Us a Separate Bag of Organic Waste”

This two-year project was partially funded by Canadian Fund for Local Initiatives (CFLI) executed at Pakistan’s second BSFL municipal food waste valoristaion research facility established by Dr. Saleha Mahmood and her team in Lahore. She conceptualized this BSFL circular model and acted as a team lead and later scientific consultant for this project. The idea was to design a research facility more like an integrated living farm with a rearing and waste handling unit, a training hall and laboratory, small hen farm and a cozy kitchen garden.

Around 400 kg/day of food waste from a community of 150 households, a nearby boarding school of 800 students, 5 fruit juice shops and 3 restaurants was systematically collected and transported by SEEP (Society for Empowerment and Environmental Protection), a local NGO to the decentralized BSFL facility.



Collected food waste



A total of 1900 brochures were distributed with campaign slogan “Give Us a Separate Bag of Organic Waste, We will Recycle it to the Mother Nature”.

Collaboration with SEEP helped to conduct highly effective seminars and door-to-door strategic awareness campaign encouraging waste segregation at source by highlighting the importance of BSFL community model. Waste pickers were officially incorporated in the project to ensure effective waste collection and transportation and incentivized accordingly.



Kitchen garden







BSFL rearing facility

Excellent case study

Though various BSFL rearing and waste handling methods were experimented and SOPs were developed, here is a breakdown of key project highlights:

- Direct project message was delivered to 1924 people, and 57,600 waste collection bags were distributed for better facilitation.
- After two months of targeted community awareness campaign nearly 70% of the received waste was well-sorted as pure food waste.
- BSFL valorisation resulted in nearly 85% waste weight reduction. The harvested adult larvae were fed to the chicken while 2-5% was recycled back into the system. The organic eggs produced were bartered and also distributed in the community as a token of appreciation and a strategy to introduce an innovative circular business idea. BSF frass was used for onsite kitchen gardening.





BSFL training

- The eggs produced from BSFL fed chicken and fruit vegetables grown on BSFL frass was of extreme good quality tastes hell better than conventional market ones.

- The project demonstrated that a decentralised waste management model at community level can help to avoid long-distance transport for waste disposal (in this case it was 35 km away from landfill, saving nearly 50% transport cost)



Frass



Feeding BSFL to chicken

What is next?

The initiative continued after successful implementation of the project leading to the development of compact and convenient 50ft^2 BSFL rearing and waste treatment system. It also forms the basis of our upcoming BSFL organic waste banking project.



Community engagement



Dr. Saleha Mahmood

Dr. Saleha is an environmental scientist and have been working on Black Soldier Fly Larvae (BSFL) since 2018. She holds the honor of designing, establishing and operating Pakistan's first two BSFL rearing and food waste valorization facilities meant for research and training purposes. She became Pakistan's first PhD who scientifically reared BSF at field scale and assessed its performance under ambient weather conditions of a semi-arid region, supporting local farming with low-tech infrastructure. She successfully reduced the space foot of BSF waste treatment to five times with significant waste reductions. Her flagship projects include developing and evaluating decentralized BSFL municipal organic waste valorization systems at household and community level.

The purpose was to encourage waste segregation at source, increase social acceptance for BSF farming and bioconvert that waste into animal feed and soil fertilizer.

She also designed simplified rearing methodologies, structures and developed SOPs for decentralized waste management systems governed by insect farming. Her mission is to shift this novel technology beyond labs to practical application with a goal to solve the real world problem of food waste, soil crisis and food insecurity, making circularity a reality.

Written by Dr. Saleha Mahmood

Contact: salehaamahmood@gmail.com

A bioeconomic model for house crickets,

a new practical tool for cricket farming industry



A new article titled “A bioeconomic model linking growth, survival, and feed conversion to profitability in farmed *Acheta domesticus*” by Rodrigo Zorrilla González and Erik Neff has been published in the Journal of Insects as Food and Feed.

What is the research about?

Our research introduces a bioeconomic model that bridges the gap between biological data and industrial production outcomes.

- For producers: the model serves as a decision-support tool to identify high-leverage traits, allowing for prioritization of management changes that offer the greatest economic return.
- For researchers: the model provides a mathematical framework to justify research into specific interventions, such as selective breeding, by directly linking life-history traits to unit economics.

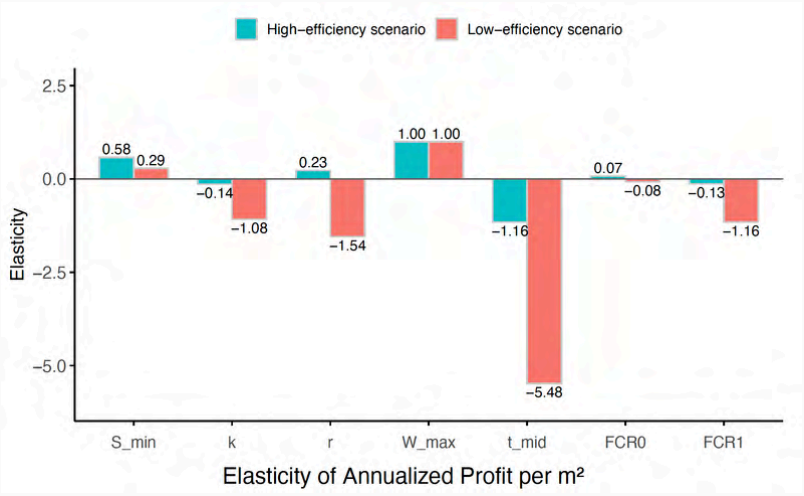
While developed with *Acheta domesticus*, the logic is species-agnostic and adaptable to any farmed organism through reparameterization of its core functions.

Why focus on bioeconomic models?

The edible insect sector currently lacks practical models to support operational decisions. We focused on this gap to standardize the reporting of critical biological metrics and to provide a platform for benchmarking and progress tracking.

What did you find?

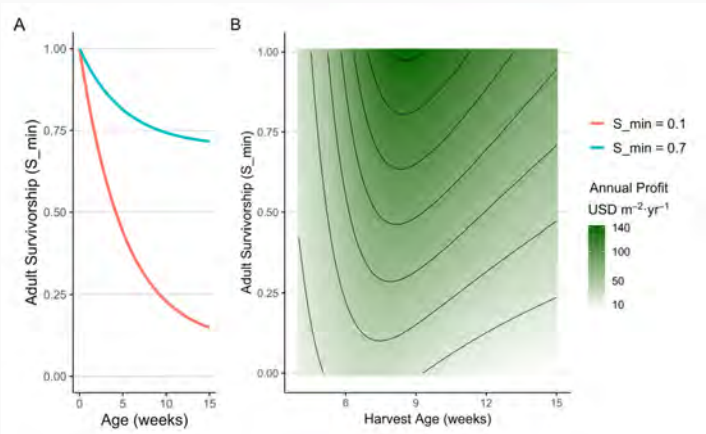
The parameters that most significantly affect profitability depend on the specific life-histories of the farmed organism and the efficiency of the production system. Furthermore, optimal harvest timing is dynamic, and can shift based on biological performance and local cost structures.



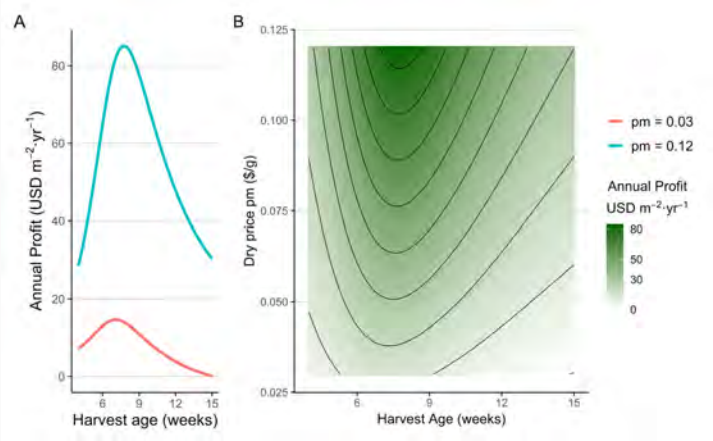
Tornado plots demonstrating parameter sensitivity across different efficiency scenarios

“standardized benchmarking converts biological data into ROI”

Example model outputs of high- and low-efficiency farming scenarios



A) Two survivorship scenarios and B) a profit heatmap illustrating the interaction between survivorship asymptote and harvest age



A) Profitability over time for two market price scenarios and B) a profit heatmap illustrating the interaction between market price and harvest age

Why does it matter?

This research provides accessible, scalable insights intended to empower the industry. By releasing open-source R code with transparent documentation, we ensure that both researchers and producers can apply these tools without the need for expensive infrastructure or complex automation.

What's next?

The next phase involves integrating higher-order functions, for example interactions between rearing density and mortality or temperature and growth dynamics, to capture the full complexity of scaling systems.

Written by Rodrigo Zorrilla González

Read the full article: González, R., & Neff, E. (2026). A bioeconomic model linking growth, survival, and feed conversion to profitability in farmed Acheta domesticus. Journal of Insects as Food and Feed. https://doi.org/10.1163/23524588-bja10365

Meet the author

Dr. Rodrigo Zorrilla González is the founder of Bravo Farm & Laboratories in Mexico; he also serves as the Co-Chair of the Insect Food Ingredients and Foods Working Group.

Bravo operates as a hybrid farm and laboratory focused on applying eco-evolutionary principles to insect agriculture and producing *Acheta domesticus* products for the Mexican market. The group focuses on developing accessible, science-based protocols that are replicable and scalable across the industry.



Dr. Rodrigo Zorrilla González

INsects for a Sustainable Environment and Circular bioeconomy

What is INSECt?

This grant, supported by the National Science Foundation in the United States, aims to promote a broader global perspective on the relationship between insects, humans, and the bioeconomy. Its goal is to advance insects as alternative resources and examine how economic factors can help drive the growth of this emerging industry.



INSECt Symposia – March 16-18, 2026

The INSECt symposia held in March brought together researchers from across the center to share emerging ideas, strengthen transdisciplinary connections, and advance INSECt's vision.

INSECt.
Insects for a Sustainable Environment and Circular bioeconomy.

Read more about INSECt



Group on a tour at The Indiana Historical Society

Developing common conceptual frameworks

The sessions highlighted how diverse expertise, from the natural sciences to the social sciences and humanities, can be integrated to address sustainability challenges and the insect-human-bioeconomy nexus.

Jerome DuMortier (Ag Economist), Leslie Etienne (Africana Studies), Gabriel Filippelli (Geologist), Bob Fischer (Ethicist), Laura Gasco (Animal Nutritionist), Heather Jordan (Microbiologist), Jason Kelly (Historian), Daniele Kunz (Geneticist), Christine Picard (Molecular Biologist), Jeffery Tomberlin (Entomologist), David Zilberman (Ag Economist) have participated in the symposium.

Through a combination of activities and discussion, participants exchanged feedback on ongoing work, identified opportunities for collaboration, and explored common conceptual frameworks that will guide future research and outreach activities.

Collectively, the March symposia reinforced INSECt's role as a collaborative, international forum for innovative thinking around insects and sustainable environmental solutions.Outcomes include multiple research articles, and additional non-traditional scientific works.



Laura Gasco selfie at the symposium meeting



Heather Jordan



Group dinner

Written by Christina Picard

Explore new articles

Harnessing insect-derived oils for enhanced efficacy of plant-based repellents against disease-transmitting mosquitoes

John Bwire Ochola, Cynthia M. Mudalungu, Hosea O. Mokaya, Xavier Cheseto, Gilvian N. Onsomu, Subramanian Sevgan, Segenet Kelemu, Baldwyn Torto & Chrysantus M. Tanga

Unveiling the hidden RNA virus diversity in organic wastes: Shaping and reduction effects of black soldier fly treatment

Qianqi Shao, Zhijian Shi, Yi Cheng, Chao Zhang, Zengshuai Zhang, Yalei Zhang, Shicheng Zhang, Gang Luo

Mexican edible insects: Nutraceutical potential and culinary applications

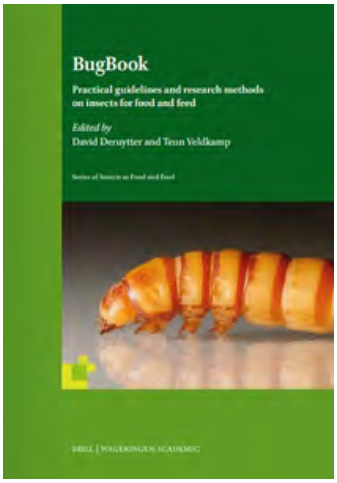
Oscar Abel Sánchez-Velázquez, Griselda Mericia Rabadán-Chávez, Daniel A. Jacobo-Velázquez, Luis Mojica

Towards bioethical and functional standards in the slaughter methods of edible insects: A narrative review

Oscar Abel Sánchez-Velázquez and Alan Javier Hernández-Álvarez

BugBook: Practical guidelines and research methods on insects for food and feed

Edited by David Deruytter and Teun Veldkamp as part of the Series of Insects as Food and Feed





Did you know?

that ASIFF members have exclusive access to a curated list of recent publications in the field of edible insects? This resource is updated every month, helping members stay informed about the latest research, trends, and innovations in insect-based food and feed.

You can explore it here: https://asiff.org/research/latest-publications/

Beyond the term ‘edible insects’:
consumption is specific not generic

The term “edible insects” is overly broad and fails to capture the diversity within the sector. Just as we distinguish between beef, poultry, and fish, different insect species have unique nutritional profiles, sensory attributes, and production systems. Lumping them together limits clarity and sector development.

Vagueness can create uncertainty and even scepticism among consumers. Clear, specific naming helps communicate what exactly is being consumed, improving transparency, traceability, and ultimately trust. Therefore, a structured system would specify species (e.g., cricket, mealworm), processing form (e.g. powder, whole, oil), and possibly production methods. This mirrors existing food systems and supports labelling, regulation, and marketing.

To achieve this milestone in the sector, it requires a coordinated effort. Scientists can provide the evidence base, industry can adopt and operationalize clear naming, and regulators can standardize and enforce terminology. Otherwise, the sector risks stagnation. Without clarity, consumer acceptance may remain limited, regulatory frameworks may lag, and opportunities for scaling and market differentiation could be lost. As the insect-based food industry matures, precision in language will be a critical step toward unlocking its full potential.

Kinyuru, J., & Ndung’u, N. (2026). Beyond the term ‘edible insects’: consumption is specific not generic. Journal of Insects as Food and Feed, 12(5), 793-796. https://doi.org/10.1163/23524588-20260003

Meet the author



John Kinyuru

Dr. John Kinyuru is the Vice-President of ASIFF. He is a food and nutrition scientist specializing in sustainable food systems, with a strong focus on edible insects and alternative protein sources. He is actively involved in advancing research on the nutritional, functional, and safety aspects of insect-based foods, product formulation, and the application of emerging technologies to improve the scalability and acceptability of novel foods. He is at the forefront in advocating their role in addressing food and nutrition security challenges. From his research and others, African continent established continental standards on edible insects marking a significant milestone in growth of the sector. As a result, he was recently elected to the prestigious Fellowship of African Academy of Sciences.

As Vice-President of ASIFF, Dr. Kinyuru is committed at a global scale to fostering collaboration across research, industry, and policy to support the growth of the insect-based food sector globally.

John is affiliated with the School of Food and Nutritional Sciences at Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Nairobi, Kenya.

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Event Highlight

SCIFTS x RCA: Edible Insects Through Science and Culinary Collaboration



At a recent joint event hosted by the Southern California Institute of Food Technologists (SCIFTS) and the Research Chefs Association (RCA), academic and industry professionals gathered at Village Green Foods in Irvine, California to network, eat delicious food, and explore how emerging ingredients can move from concept to consumer reality.



Village Green Foods prepared Mole con Grillos (Mole with Crickets)

Together with Dr. Changqi Liu from San Diego State University, we presented on edible insects as a sustainable protein source. Our talk approached the topic from complementary perspectives, combining food science concepts and culinary application.

Rather than focusing solely on sustainability and nutrition, we brought in the discussion on three key areas relevant to this audience: acceptability, flavor, and safety. While edible insects offer environmental and nutritional advantages, their success depends on how they are experienced. We discussed how flavor and product format play an important role in shaping first impressions and how incorporating insects into familiar foods can reduce negative emotions and increase willingness to try.

Of course, we also had to address safety considerations, since insects are typically unwanted in a food processing plant or restaurant! Clarifying safety standards and allergen cross-reactivity helps build trust, which is essential for any novel food entering the market.

The audience brought an incredible energy to the discussion. Questions extended beyond the presentation into a thoughtful exchange about culture, perception, and how these future sustainable proteins fit into our nutrition goals and current diets. These conversations reinforced how important it is to engage not just with data, but with people's lived experiences and perspectives around food. The evening ended on a fun note, several attendees even left with cricket-based products after winning the event raffle, taking a piece of the experience (and perhaps a new perspective) home with them.



Jenny Rosoff, President of Village Green Foods, Dr. Changqi Liu, Dr. Cassandra Maya, and McKenna Rivers, co-President of SCIFTS

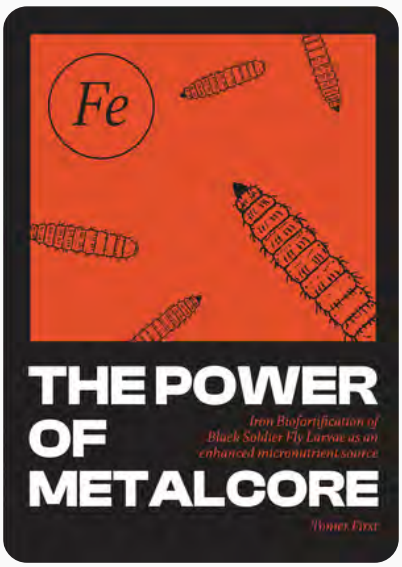
Photos via Village Green Foods
Written by Cassandra Maya

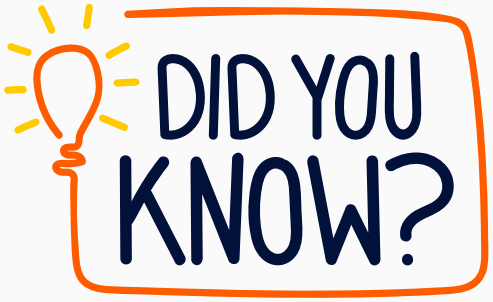
PhD on iron in edible insects

On April 29, 2026, Tomer First successfully defended his PhD thesis, titled “The Power of Metalcore: Iron Biofortification of Black Soldier Fly Larvae as an Enhanced Micronutrient Source.” The research was conducted within the Food Quality and Design group, Wageningen University (the Netherlands) under the supervision of Assist. Prof. Maryia Mishyna and Prof. Vincenzo Fogliano.

The PhD defense committee consisted of Professor Dr. Bregje Wertheim (Wageningen University & Research), Dr. Simone Mancini (Università di Pisa), Dr. Ljubinka Francuski (Protix), and Dr. Alida Melse-Boonstra (Wageningen University & Research).



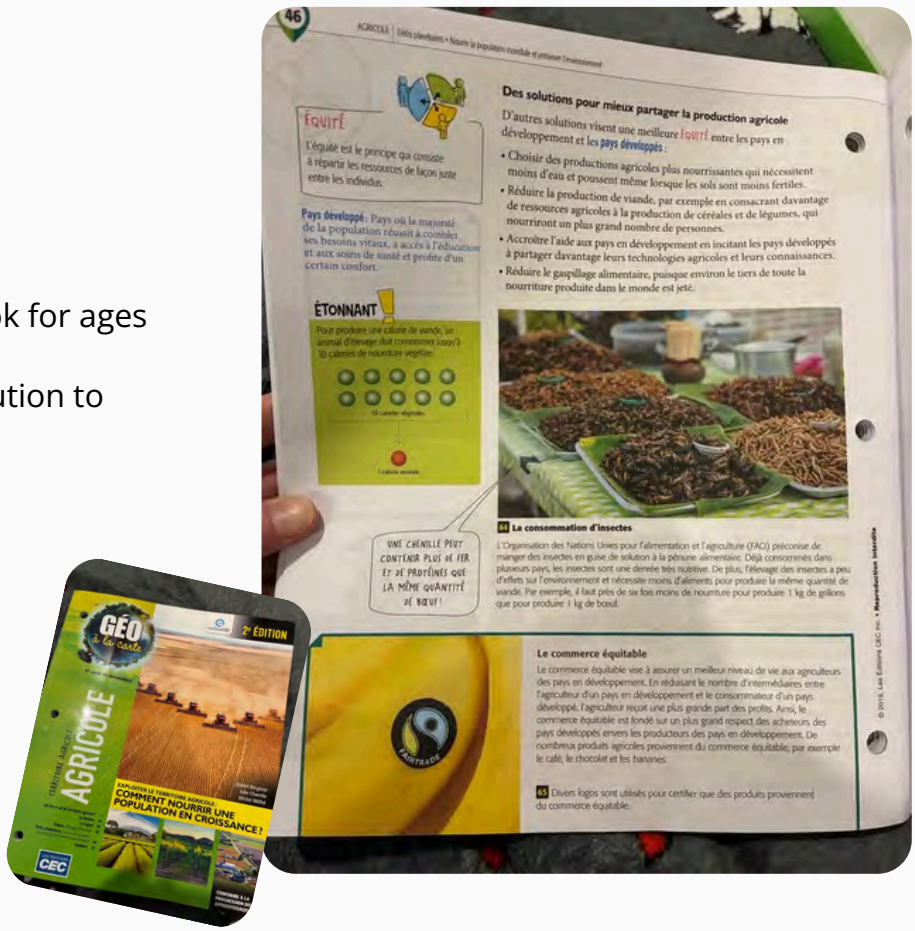




French-Canadian geography textbook for ages 12–14 mentions that the UN's FAO recommends eating insects as a solution to food shortages.

It highlights that insects are highly nutritious, already eaten in many countries, and much more environmentally friendly than livestock.





Member Research Highlights



Sofia Katzin

Sofia is a technical consultant in the Black Soldier Fly industry, supporting BSF facilities globally with practical troubleshooting, trial design, and performance optimisation across feedstocks, nutrition, and operations. She is based in Perth, Australia.



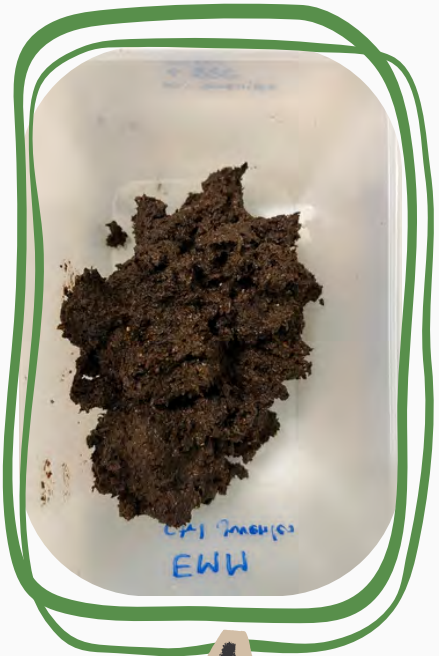
ADULT BLACK SOLDIER FLIES

What is your research about?

In 2025, I ran a facility-based trial to assess the suitability of chicken manure as a feedstock for Black Soldier Fly (BSF) larvae. The goal was to test whether this high-volume residue could be reliably bioconverted under real operating conditions.

Why focus on BSF and chicken manure?

In Western Australia, chicken manure generally can't be spread raw, because it can attract Stable flies and create major nuisance and biosecurity issues. As a result, producers typically rely on composting, but that takes time and can be operationally demanding. BSF bioconversion is interesting in this context because it could add value while speeding up stabilisation, potentially shortening the pathway from "problem waste" to a safer, more usable product (e.g., a frass-based soil amendment). That local reality is quite different to places where raw spreading has historically been more common, and it changes the incentive to find faster treatment pathways.





CHICKEN MANURE!

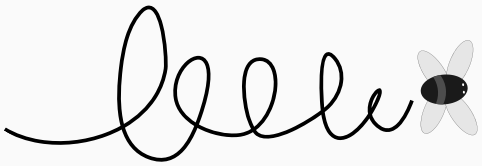
Photographs provided by Sofia Katzin

Member Research Highlights

What did you find?

The trial initially presented as a nutrition and formulation problem. The manure stream was heavily unbalanced nutritionally, so we tested multiple nutritional and process improvements (adjusting diet balance and handling) to try to stabilise performance. Despite these changes, we still saw high mortality and consistently low outcomes. That prompted a deeper root-cause investigation beyond nutrients and process conditions. Ultimately, we identified residual larvicide as the most likely driver of the mortality, and therefore the low performance. In Australia, poultry production commonly uses larvicide additives (via feed or barn programs) to reduce housefly outbreaks, and residues can carry through into manure streams.

Once that became clear, the result made sense: the issue wasn't simply that "chicken manure doesn't work," but that this manure stream carried an inhibitor that overwhelmed any nutritional optimisation.





Why does it matter?

This work highlights a practical reality for BSF and waste-to-value projects: feedstock identity is not the same as feedstock suitability. Two inputs labelled "chicken manure" can behave completely differently depending on upstream practices.
For operators, it reinforces a few key points:

- Feedstock qualification must include residue risk, not just moisture, protein, or energy balance.
- Performance variability may be a supply-chain issue, not an on-site operations issue.
- Trial-and-error formulation has limits if an unseen inhibitor is present, sometimes the "best" optimisation step is changing the feedstock source or adding screening steps upfront.

What's next?

Two additional pathways that may be worth exploring (not tested in this trial) are:
1. Targeted microbial approaches: adding microbes to help degrade or detoxify residues and reduce their biological impact, and
2. Longer-term strain development/selection: developing BSF lines with improved tolerance or resistance to the larvicide.

Photographs provided by Sofia Katzin

Dine & Dance on the bank of the river

Twelve years after its first successful edition in Wageningen, the **Insects to Feed the World (IFW)** international conference has become a global leading event in the insect farming sector, bringing together academics and industry professionals from all over the world.

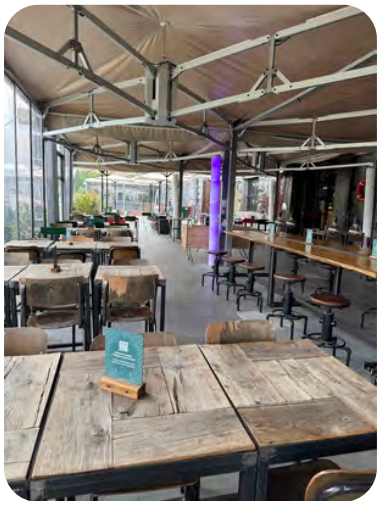


Apart from the rich scientific programme, "Insects to Feed the World" 2026 will also offer the participants the opportunity to attend the **"Dine & Dance on the bank of the river"**, which will be hosted by the **"Capodoglio sul Po" (Murazzi)**.

Date: June 9, 2026
Starting at 7:00 PM



Typical Italian food will be offered to the participants, but, most importantly, a DJ set will create the perfect atmosphere to party and have fun.



The DJ of the evening will be **Ilaria Biasato** (aka DJ Bias), an Associate Professor at the University of Turin.

More than 10 years ago, Ilaria Biasato discovered not only her love for the insect-based research, but also for DJing in her free time. She found her perfect dimension at scientific congresses, where she can present during the day and DJ during the night: science and music can perfectly match together.



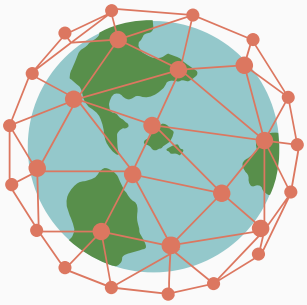
ASIFF Annual Meeting during IFW2026

During IFW 2026 conference, 2026 Annual General Assembly meeting will take place on **June 11, 2026, 12:30-13:30 CET**.



Join the meeting to get the latest updates:

- Annual report ASIFF activities
- Annual financial report
- Annual report communication committee
- Pitches of on Working Group activities



ASIFF Communication Team Calls

PhD webinars:
Students and postdocs are welcome! Are you a student or a postdoc and interested to be involved in PhD webinars either as an organizer or a presenter? Send us a message: info@asiff.org

Call for regional representatives to join ASIFF Communication Team: Help ASIFF connect with local universities and organizations and bring unique news from your region to wider ASIFF network. Interested? Email us at info@asiff.org.

Misconceptions about insects as food

Developed by ASIFF working group Insects Food Ingredients and Foods

Key points:

- People eat insects in many cultures as delicacies, not only in times of emergencies.
- Not all insects are “pests” and edible insects do not include just any insect. Insects can offer more than protein, and nutritional value varies by species.
- Insect-based foods are more likely to complement other foods than replace them.
- Like all food, insect products require proper hygiene, processing and handling.
- Food allergies matter: an important consideration that should be taken seriously.



Explore ASIFF working groups

Episode #33
by Get The Bug podcast



[Insects to Feed the World: Conference Insights and Ecological systems]

PhD opportunity

[Co-fermentation, insect bioconversion, and mild drying to valorise agri-food by-products into functional food ingredients]

This PhD will provide advanced interdisciplinary training in food fermentation, insect bioconversion, sustainable protein production, and drying technologies, preparing the candidate for careers in academia, research organisations, and the food and biotechnology industries.

UNIVERSITY OF LIMERICK OLLSCOIL LUIMNIGH
INTERNATIONAL HELLENIC UNIVERSITY
UCC University College Cork, Ireland Coláiste na hOllscoile Corcaigh
SUSFERM

[Read or publish career opportunities on ASIFF website]

Would you like to be featured in the next ASIFF newsletter?

Interested to participate in ASIFF communication activities (newsletter, website, etc)?

Contact us by sending an email to info@asiff.org



Editors of ASIFF newsletter, issue 5: Maryia Mishyna and Cassandra Maya