



INTERNATIONAL WINTER SCHOOL SMART FEED

Insects and microalgae as novel feed for sustainable livestock production

Digital edition

Period: February 15, 23-24th 2022

Introduction

The winter school explores one of the core themes of the circular economy: the recovery of **municipal solid waste** to produce high added-value products, such as protein sources from **insects** and **microalgae** for sustainable **feed**. Initiated by the [SMART FEED](#) project – Sustainable Model for Agroenergy and Feed production by Urban Waste Recycling and Treatment – the school is granted by [Cariplo Foundation](#), supporting the validating of a local circular economy model for the production of healthy poultry feed by insects grown on the organic fraction of solid waste, and microalgae on the liquid fraction of digestate.

The anaerobic digestion of residual wastes provides the required energy to sustain the manufacturing process, guaranteeing the closure of the waste loop and producing renewable fertilisers for greener agriculture practices.

The **academic lectures** will present the state of the art of utilising the organic waste to produce biomass from insects to obtain "local protein" and ultrafiltered digestate as a culture medium to produce algal biomass. The **business world** will show success stories in novel protein sources for animal feed, in which innovative products with high added value have brought value to the traditional livestock sectors.

Students will gain **business modelling** skills by joining a business game session and creating a successful business plan in the circular economy sector. Handouts will be provided in a two-hour preparatory training on February 15th.

Venue

Online

Who can attend the school?

The school is designed for **Master's graduates, PhD students and post-doctoral researchers** working in universities, public and private research centers.

Applications are welcome from all countries. Participation is free of charge.

In order to attend the school, **CV, motivation letter, and Application Module** (available at this link: <https://www.italbiotec.it/smartfeed.html>) should be sent to: verdepertutti@gmail.com

Up to 30 Participants will be selected.

Please note the following key dates:

- Deadline for submission of application: February 3rd 2022
- Successful applicants informed: February 10th 2022



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Program

TUESDAY February 15th 2022

14.00 – 16.00 Business game training

WEDNESDAY February 23rd 2022

Academic lectures

- 9.30 **Opening and welcoming the participants**
- 9.40 **Reframing the concept of waste: the role of Circular Economy for a sustainable development**
Fabrizio Adani – Department of Agricultural and Environmental Sciences, Gruppo Ricicla Labs, University of Milan
- 10.00 **Waste-to-feed bioconversion by insects**
Sara Savoldelli – Department of Food, Nutrition and Environmental Sciences, University of Milan
- 10.30 **Microalgae from recovered nutrients**
Su Min – University of Milan
- 11.00 **Animal nutrition: the use of insects and algae for sustainable feed production**
Stefania Colombini, Ivan Toschi – Department of Agricultural and Environmental Sciences, University of Milan
- 11.30 **Microalgae and insect production from waste: environmental evaluation**
Giuliana D'Imporzano – Consorzio Italbiotec
- 12.00 **Q&A and discussion**
- 12.20 **Conclusion of the morning session**
Lunch
- 14.30 **Business game: how to develop a successful circular business plan**
- 17.00 **Conclusion**

THURSDAY February 24th 2022

Industrial case studies: challenges and opportunities of the circular economy

- 9.00 **Consorzio Monviso Agroenergia – The biogas sector as circular hub: the Powerfood model**
- 9.25 **Breeding insects to produce sustainable proteins: the successful case of BEF Biosystems**
- 9.50 **Italian Cricket Farm: sustainable insects' production for food and feed use**
- 10.15 **Livegreen: the circular challenge of microalgae cultivation**
Break
- 10.30 **Business plan presentations from students**
- 13.00 **Conclusion**



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