



INSECT4CITY

Consortium
since 2020



Massimiliano Latella - Unsplash

Benefits and risks of entomoconversion for recycling biowaste from urban and periurban zones

Coordination

Erwan Engel (UR QuaPA)
erwan.engel@inrae.fr
 Patrick Borel (UMR C2VN)
patrick.borel@univ-amu.fr

Keywords

Biowaste
 Bioeconomy
 Circular economy
 Entomoconversion
 Insect
 Urban/periurban area

INRAE departments

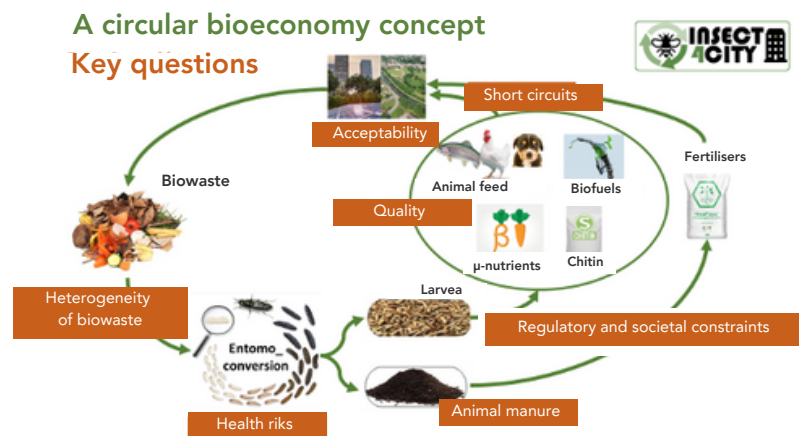
[ALIMH](#)
[AGROECOSYSTEM](#)
[ECOSOCIO](#)
[MATHNUM](#)
[MICA](#)
[PHASE](#)
[TRANSFORM](#)

Entomoconversion in a circular bioeconomy approach



In urban and periurban environments, where waste management is an increasingly serious issue, entomoconversion (bioconversion using insects) is an attractive solution that is compatible with the circular bioeconomy (see diagram below). However, entomoconversion also involves specific questions concerning the heterogeneity of bio-waste, health risk management, regulatory and societal constraints, the quality of by-products and the establishment of dedicated short circuits

Progress and results



The activities of the INSECT4CITY consortium have focused on the overall benefit, risk assessment, and discussions of key issues. Initially comprised of 14 research units, 10 new partners progressively joined the consortium which now totals **17 research units from 8 INRAE departments** and 7 non-INRAE research units (CNRS, INSERM, ONIRIS, universities).

INSECT4CITY consortium has led to:

- Sixteen recorded 2-hour themed webinars.



- The creation of several projects: FLY4WASTE (BETTER exploratory project), FIFA (targeted project currently being evaluated by ANR), AgriFoodTech project (underway with A*STAR, Singapore).
- Marie Papin's doctoral thesis, co-supervised by three consortium members and co-funded by BETTER and QuaPA-MASS (started In December 2022).
- The creation of an e-Watch on entomoconversion with the help of DIPSO-INRAE, available on the BETTER website
- A summary article involving most of the members of the consortium, bringing together the Ideas put forward during the webinars, is currently being finalised for submission by the end of the year.
- A paper by the consortium presented at two international conferences.
- An "insects" event on the INRAE stand at the 2023 Paris Agricultural Show
- Participation in educational activities (INSECT Doctoral course in May 2023; Summer School on insects organised by Grenoble University).

Partners

INRAE Division	INRAE research units	Expertise and contributions
AES (AGROECOSYSTEM)	UMR ITAP	Economic and social impact of entomoculture
ALIMH	UMR C2VN	Nutrition, bioaccumulation of micronutrients with health value
	UMR CSGA	Sensory acceptability, organoleptic defects
ECOSOCIO	UMR SMART-LERECO	Societal acceptability, economic evaluation
MATHNUM	UR LISC	Societal acceptability and the social impact of innovations
MICA	UMR MICALIS	Insect health and microbiological safety in entomoculture
	UR LBE	Microbial ecology
	UMR SECALIM	Microbiological safety, health/food risk-benefit assessment
PHASE	UMR BOA	Zootechnics, animal nutrition, insect proteins in animal nutrition
	UMR SAS	The environmental impact of entomoculture and the role of livestock farming in the circular bioeconomy
TRANSFORM	UR QuaPA	Chemical safety
	UMR IATE	Multi-actor/criteria assessment, risk-benefit analysis
	UMR SAYFOOD	Insect transformation processes
Partners	Units	Expertise and contributions
University of Tours-CNRS	UMR IRBI	Insect biology
CNRS	UMR GEPEA	Insect processing for animal feed and human food
SYSAAF	Nouzilly Branch Office	Genetic selection of the insect

