



SCALTBUR

LEADING A REVOLUTION
IN BIOWASTE RECYCLING

Applications of protein from insects in food and feed industry

Lucian Miron (Zetadec, The Netherlands)

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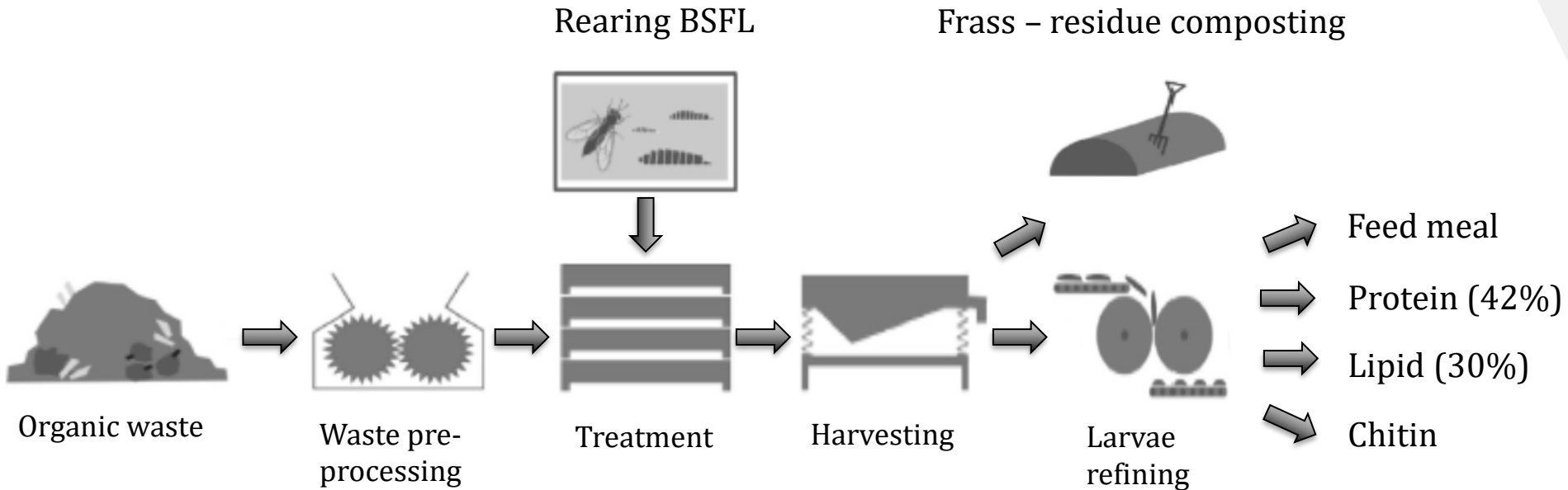


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➤ Rearing of insects (BSFL) on organic waste



➤ Issues



- The use of insect meal as feed and food is limited by the **legislation in Europe**
 - Novel Food according to the guidelines for market authorization of products by EFSA
 - Documents of safety demonstration of certain insect
- **Consumer acceptance** - the largest barrier to the adoption of insects as viable sources of protein in many Western countries

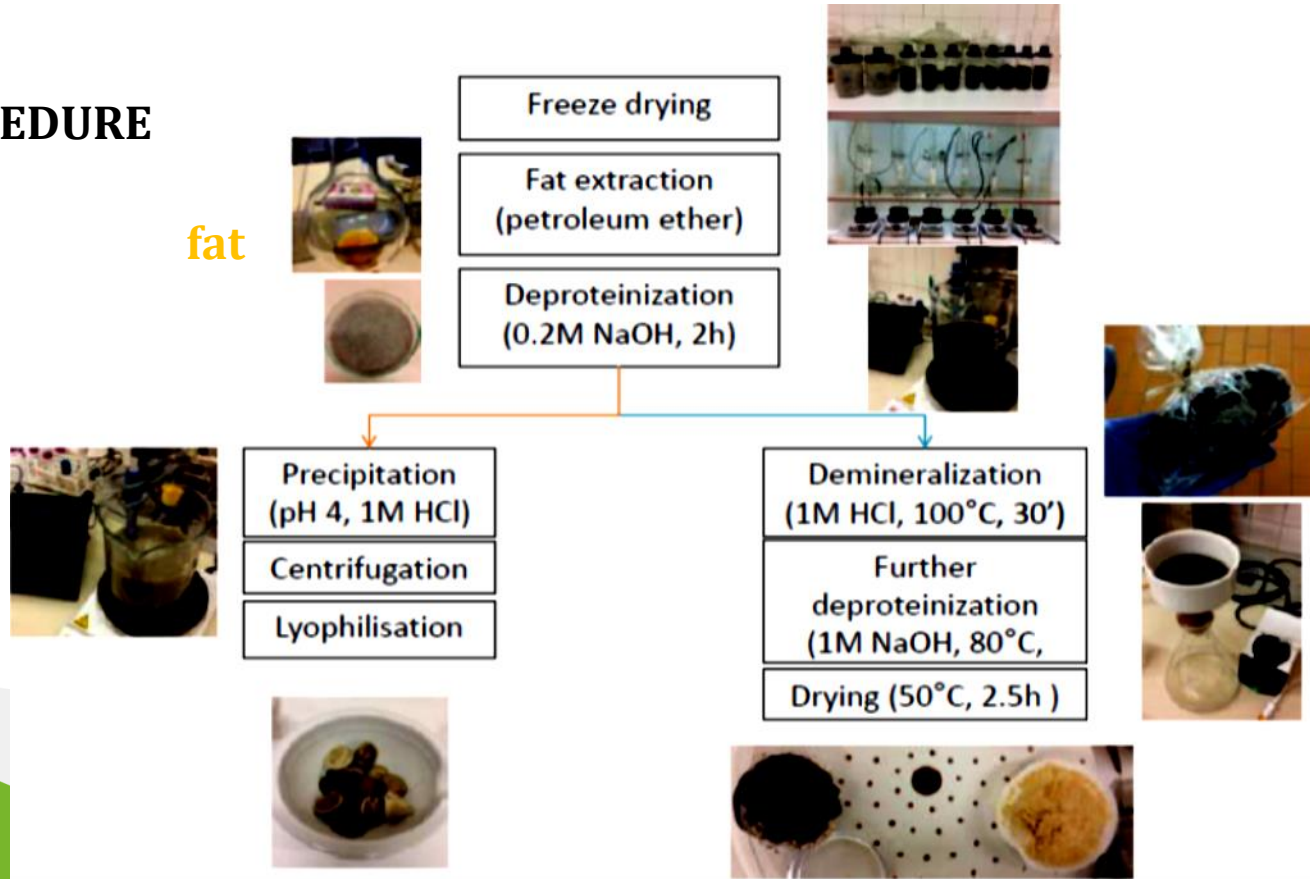
Fractionation of insects at lab scale

LAB PROCEDURE

fat

protein
isolate
(74.9%)

chitin



Techno-functionalities of BSFL proteins

	Techno-functional property	Food system
High solubility	Solubility	Beverages
	Emulsification	Sausages, sauces, soups, cakes, salad dressings, ice-cream, yogurt
	Foaming	Whipped toppings, desserts, cakes
	Gelation	Meats, curds, cheese, meat analogues
Intermediate solubility	Cohesions-adhesion	Meats, sausages, baked goods, pasta
	Elasticity	Meats, bakery, cheese
	Viscosity	Soups, gravies, low-fat products
Low solubility	Fat adsorption	Meats, sausages, cakes, bakery
	Flavour binding	Meat analogues, bakery
	Hydrophobic films	Food coatings

- No foam for BSFL proteins at pH=7
- The protein from Organic waste BSFL - stable foam at pH=2
- No gelation at concentrations of 5% up to 25%
- WPI gels at >5%

➤ BSF meal for animal feed

- Insects grown on former foodstuffs are safe for animal feed – Conclusion of a study of Dutch Risk Assessment & Research Office (BuRO).
- Insect-fed trout available to consumers since 2018
- BSFM cannot fully replace fish meal for Atlantic salmon and remains a supplementary protein source.



➤ BSF meal for animal feed

- Dog food made from insects is available on sale



- **Digestibility** - In-vitro digestibility of protein in whole BSFL was 88.7%
- **Palatability** - In two-bowl preference tests, the intake ratio of dry foods with BSFL was about 60:40 in dogs and 40:60 in cats
- **Owner acceptance** - 92% of pet owners gave positive feedback after learning they had been feeding an insect-based diet

➤ Conclusions

- Insects can be a sustainable protein source
- Legislation and consumer acceptance are the main issues to the adoption of insects as viable sources of protein
- Preliminary results show good techno-functionalities of BSFL proteins
- Insects grown on former foodstuffs are safe for animal feed
- There is already animal feed made from insects available on sale.

THANK YOU!



Lucian Miron
Zetadec, The Netherlands

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 SCALIBUR project

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