

INSECTS AS A SOURCE OF PROTEIN

Locations	China, Ghana, Mali, Switzerland
Dates	01/02/2013 - 30/04/2016

Summary

Global demand for animal-sourced foods is accelerating. Fishmeal and crops such as soya are key ingredients in animal feeds but are not ecologically or economically sustainable. Insect protein presents a viable alternative. The PROTEINSECT project explored fly larva (maggots), which are nutritious and can be mass-produced at low cost, as animal feed. The project developed and optimized maggot production systems, determined safety and quality criteria and evaluated the performance of protein extracts.

The problem

Global demand for animal-sourced foods is accelerating rapidly due to population growth and economic development. Fishmeal and crops such as soya are key ingredients in animal feeds but are not ecologically and economically sustainable. Insect protein presents a viable alternative, relieving pressure on fisheries and freeing up significant quantities of food crops for human consumption. Maggots, or the larva of various fly species, are particularly promising as animal feed because of their nutritional properties and because they can easily be mass produced on a wide range of waste substrates offering

potential for low economic and environmental costs.

What we are doing

Working in collaboration with partners, the PROTEINSECT project aimed to facilitate the exploration of insects as an alternative source of protein for animal nutrition.

The project goal was to develop and optimize maggot production systems for animal feed in Europe, China and West Africa, determine safety and quality criteria for this production, and evaluate the performance of protein extracts. Through comprehensive insect life cycle assessments with environmental and socio-economic considerations, PROTEINSECT will determine the optimal design options for maggot-based animal feed production systems in these regions.

To complement the research, PROTEINSECT supports a pro-insect platform in Europe, encouraging the holistic adoption of insect protein as a long-term, sustainable solution. The goal is to reduce the reliance on ecologically costly fish and plant sources, and ultimately pave the way for insects to become a direct component of human food security.

Results so far

With research undertaken by scientists from 12 institutions in Europe, China, Mali and Ghana, PROTEINSECT is a global collaboration. The work was divided into seven working goals which included optimizing existing, and developing new fly production methods in Europe, China and West Africa; investigating insect protein processing methodologies and conducting fish, poultry and pig feeding trials; assessing quality and safety of substrate and insect protein; carrying out full life cycle assessments of insect-based animal feed production systems and subsequently providing technical and policy recommendations; developing a Pro-Insect Platform in Europe; disseminating and demonstrating the advantages of exploiting insects as an alternative source of protein; overseeing project management and coordination.

The teams from CABI Switzerland and CABI China were involved in several of these activities. In particular, we led the first goal, aimed at optimizing existing production systems, and at developing new and economically viable fly breeding methods for animal feed production. The development of an integrated approach is encouraged through the establishment and maintenance of a database on fly rearing and production methods and a number of factors are investigated in order to improve insect production efficiency and to facilitate added value. CABI also collaborated in the environmental and socio-economic life cycle analysis which led to technical and policy recommendations on the design of sustainable insect-based animal feed production systems.

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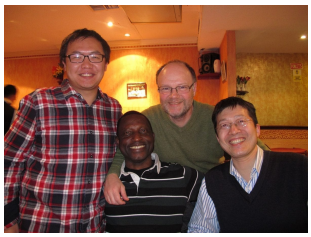
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Partners

University of Stirling, UK, The Food and Environment Research Agency (FERA), University of Leuven, Belgium, Nutrition Sciences, Belgium, Minerva Health and Care Communications Ltd, Huazhong Agricultural University, Wuhan, China, Institut d'Economie Rurale, Mali, Guangdong Entomological Institute (GEI), Guangzhou, Fish for Africa, Ghana, Grantbait Limited, UK

CABI Project Manager

Marc Kenis






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