



Mercator Research Program | Call 7

Use of Black Soldier Fly larvae in the nutrition of organic laying hens and broilers

Background

Insects, as an alternative protein source for animal feed are very nutritious and potentially have a lower environmental impact compared to conventional feeds such as soy and fish meal. This project investigates key elements of integrating a novel protein source, namely insect material, into organic diets for poultry. The project builds on black soldier fly larvae grown on various substrates under controlled conditions.

Objective

The main goal of the project is to investigate and identify ways and constraints of including insect material of different origin and composition into organic diets for growing and laying poultry. The project aims to address the influence of different substrates used for insect cultivation on feeding value, animal performance, and contamination risk. Additionally, it will be determined how far the larval fat, the part of the larval material with the highest energy content, can be included into poultry diets.

Research Approach

Soybean protein or plant oil or both will be replaced in the diet by insect protein and fat from two different origins. This will be tested in both an organic broiler genotype and in layers. The transfer of contaminants, namely heavy metals and mycotoxins, from substrate to larval protein meal and fat to meat and eggs will be determined in an experiment with with layers. Various traits of performance, protein and energy utilization, as well as carcass, meat and egg quality, and contents of contaminants are measured.

Relevance and Expected Outcomes

Eventually, the project results will help to develop guidelines for the use of feed insects in organic farming and give indications for their use in improving global food security. This might help overcoming a major inefficiency of the current feed insect production. Utility of insect-based feed ingredients in poultry diets and the level of transfer risk of contaminants from larval substrates via larvae to meat and eggs will be examined. As feed insects can be grown easily on farm, the project is relevant for small poultry holders, particularly in organic farming.

Food System Challenges Addressed

Alternative protein source, Insect, Poultry nutrition, Egg, Chicken meat, Food contaminants.

<https://worldfoodsystem.ethz.ch/research/research-programs/MRP/HenandFly.html>

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