




The National Food Institute is researching whether it is safe to use a wider range of waste products from the production of food and private kitchens as insect feed.

 Mealworms. Colourbox

Insects' safe journey to the dinner table

The production of insects emits 100 times less CO₂ than the production of cattle. Thus, insects are an excellent protein source for sustainable and healthy foods and for animal feed as well. The National Food Institute works closely with authorities and producers to pave the way for a production where feed and food safety are paramount.

Denmark aims to be a pioneer in the production of insects for food and feed, which is in its infancy. Insects do not need much space, and from ten kilos of feed, you can obtain 4.5 kilos of mealworms but only 2.5 kilos of pork or a mere 1.1 kilo of beef. In order to mass produce insects, manufacturers need access to cheap and sustainable sources of growth substrates as feed for the insects, and this means that feed and food safety will need to meet certain requirements.

"In a legal context, insects are defined as farmed animals, just like for example cattle. Therefore, the insects are subject to the strict feed and food legislation in the EU to ensure the health of people, animals, and the environment, and to avoid the spread of serious domestic animal diseases and the like," Head of Division Dorte Lau Baggesen says. She believes that we are close to a breakthrough where insects are allowed as feed for animals with only one stomach, such as pigs and poultry.

Science can pave the way for a law change

Today, legislation requires that feedstuff for breeding insects must be of vegetable origin and of feed-grade quality approved

also for other food production animals. Together with its project partners, the National Food Institute is exploring how more residuals from the production of food can be used as a growth substrate for insects. In particular, the legislation places strict restrictions on the use of residuals and waste products containing fish and meat.

"More scientific documentation is needed in order for the law to change so that more types of substrates can be used as feed for insects. The National Food Institute is working on showing that the production of insects can be done without spreading any biological and chemical hazards that might be present in the substrates," Dorte Lau Baggesen says. The National Food Institute is also exploring how heat treatment and processing in the production chain affects the insects. These results may provide the authorities with the necessary scientific basis for making a decision on an amendment of the legislation.

7
6

“**The ambition is** to ensure a profitable mass production of insects in the industry in the short term so that they can be used in food and feed. Hopefully, insect-based feed can alleviate the lack of proteins for domestic animals, and if the Scandinavian cuisine and the gourmet restaurants are open to using insects, this may make insects palatable to the general population. In the long term, it is our hope that it becomes legal and safe for organic household waste, which today ends up as biogas or in the incineration plant, to be used as a growth substrate for insects.

Even though it will be a while before mass-produced insects reach our dinner tables, we probably have to get used to the idea. Many of us have probably forgotten how sushi was initially received, so in time consumers will probably also accept the idea of eating insects.”

Dorte Lau Baggesen
Head of Division



The National Food Institute considers mealworms and crickets to be among the foods of the future.

📌 House cricket (*Acheta domesticus*). Shutterstock



Other insects such as black soldier flies have potential as animal feed and will in future be included in the National Food Institute's research.

📌 Black soldier fly (*Hermetia illucens*). Texas A&M AgriLife Center at El Paso

Tingling and crawling in the insect facilities

The interest in producing edible insects for both animals and people is increasing. Therefore, the researchers at the National Food Institute are carefully following how insects can become safe to eat and meet the high food safety standards that we know from other foods.

The National Food Institute has special facilities for growing insects. Here it is possible to control the temperature and humidity in the room so that the insects achieve the optimal growth conditions.

Growing the insects makes it possible to conduct different studies which shed light on the risk that disease-causing bacteria are spread, as well as how to control this in order to ensure a high level of food safety in the future production of insects.

Until now, mealworms and crickets are the best bet in terms of insects for foods. The EU has approved seven types of insects for fish feed: black soldier fly, common housefly, yellow mealworm, lesser mealworm, house cricket, banded cricket, and field cricket.