

# EDIBLE INSECTS AS ALTERNATIVE PROTEIN SOURCES

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The demand for protein is growing worldwide, partly because of the growing population and partly because of the increasing need (for meat) in rapidly developing regions. This will be increasingly difficult to meet through conventional livestock production, so we are looking for more sustainable, economical and environmentally friendly alternative methods. The inclusion of high protein crops in animal feed and for human consumption, in addition to lab-grown meat or plant-based meat substitutes, is another way of ensuring nutrient replenishment through the use of insect-derived protein.

Insect production is gaining momentum, as its potential relies not only on food and feed, but also on the context of a circular economy. Insects have the potential to convert a wide range of organic by-products into feedstuffs, which then go back into the production cycle. Insects can provide high-quality protein and nutrients for humans and animals, comparable with that provided by meat and fish, depending on their species, diet and stage of life cycle. As a source of proteins, lipids, carbohydrates, vitamins and minerals, insects show a great potential as food source.

According to the history of entomophagy, the Chinese began eating insects more than 3,000 years ago and edible insects are for a long time part of the human diet in several countries. There are more than 2,000 recorded species of edible insects around the globe.

Insects are comparable to other foods of animal origin in terms of nutritional value. Moreover, insect farming has environmental and economic implications, since insects are easily maintainable, require fewer resources and have a smaller impact on the environment compared to common livestock farming.

Europeans have reservations about eating insects as it is not part of their culture and many consider it disgusting or a sign of poverty. Thus, consumer acceptance, particularly in European countries, is a barrier to the market introduction of insects as food sources. There are signs that consumer attitudes in some developed countries are changing, but cultural barriers remain in many others.

Scientists are looking for alternative solutions to improve processing, to isolate proteins and lipids from insects to be used as food ingredients and to increase the shelf-life of insect products, in order to increase consumer acceptance.

Insects are classified as “novel food” in the European Union, they need to undergo a strict authorization procedure, which includes a safety assessment in a case-by-case approach. Based on such a risk assessment the frozen, dried and powder form of four insects have already been authorized to be placed on the market in the EU.