



Research has shown that insects are a much more sustainable protein source than traditional sources

The lesser of two weevils: insects in our food

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Introduction

Insects have been a part of the human diet worldwide for thousands of years, and in some cultures are still part of their traditional food. In some parts of Central Africa, it is estimated that half of dietary protein is derived from insects, and that entomophagy, or insect consumption, is practiced in at least 113 countries worldwide (Dobermann, Swift, & Field, 2017). There are at least 2000 edible species of insects, and even the United Nations has indicated that entomophagy could be a potential solution to the current strain on the food industry.

However, in Western countries eating insects has only recently begun to be acceptable, mostly only as sensational novelties, rather than as a serious protein alternative. As more research and development has occurred in this field, it has been shown that insects are a much more sustainable protein source than animal proteins. It is predicted that by 2050, the world population will have increased to 9 billion (Gahukar, 2013). Considering the strain already present on our food resources, how will we sustain our ever-growing population? Is widespread consumption of insects a step in the right direction for our environment?

Farming micro livestock

The farming of insects, or other related invertebrates such as arachnids, for human consumption is often described as 'micro livestock' or 'mini livestock'. There are huge environmental benefits to farming insects instead of traditional livestock like cows and sheep. Micro livestock

have much lower greenhouse gas emissions, and also take up much less space than traditional livestock farming. They also use a lot less water, which is becoming a precious commodity with increasing pollution.

There are, however, problems associated with the farming of insects. In particular, there are large gaps in research and legislation around rearing insects, their processing and storage methodologies, and how their nutritional quality is affected by what they are fed (Dobermann, Swift, & Field, 2017). It is also little known how to scale up insect production while maintaining the environmental benefits insect farming and consumption have on the planet (Dobermann, Swift, & Field, 2017). Recently in Thailand, there has been a shift from wild collection to mass rearing of insects as demand for insects as food has increased. An attempt was made at the commercial farming of caterpillars, however, pathogenic outbreaks amongst the micro livestock rendered the process expensive and ineffective (Huis, Edible insects contributing to food security?, 2015). However, cricket farming is successful, and there are over 20,000 domestic farms (Huis, Edible insects are the future?, 2016), and their success is largely due to the increasing demand from Asian and African countries for edible insects.

Grasshopper, anyone?

While not all types of bugs are edible, the most popular that are include: grasshoppers and locusts, beetles, bees, wasps, ants, cicadas and caterpillars (Gahukar, 2013; Dobermann, Swift, & Field, 2017). Many of these contain proteins, fats, vitamins, and minerals that are

comparable to traditional meats (Tao & Li, 2018).

Insects can also be used in foods, rather than just consumed in their regular form. An example of this is cricket flour. In this form, the insects have much less of a disgust factor, as the unappetising nature of consuming the whole insect is negated (Tao & Li, 2018). There are already several products that utilise such flours: in Finland, a bakery brand Fazer is making artisanal bread using cricket flour. Each loaf contains roughly 70 crickets, and costs 3.99 euros, as compared to the usual cost of traditional bread at 2-3 euros. While pricier, consumers seem to be seeking out new, niche food categories, including food with insects built into them. Fazer released their product in November of 2017. That same November, Finland joined five other European countries – Austria, Belgium, Britain, Denmark, and the Netherlands – in implementing new legislation allowing insects to be raised and sold for food use (Forsell, 2017). Other products being developed include using cricket flour in an extruded rice product (Tao & Li, 2018), as well as novelty crickets and locusts covered in chocolate.

Awareness of insects as food has increased over the years, however, this awareness is due to sensationalism. There are few articles in Western media that portray insects as a normal food or ingredient. For example, a quick Google search will find you a multitude of articles about the various types of meat and their various preparations, their flavours, uses, and flavour pairings. However, the same cannot be said for insects. There is very little, particularly in Western media, about insects, how different species have different tastes, their diverse uses in foods, or how to prepare them. There is also no current research on human consumption of insects, and therefore conclusive evidence and recommendations regarding the nutritional benefits and nutritional suitability for humans cannot be made (Dobermann, Swift, & Field, 2017).

There is a cultural taboo on the consumption of insects in the Western world, as insects are usually seen as unclean or disgusting. In Western culture, insects are a cause of distress and revulsion, predominantly in the context of food, and are seen as a food reserved only for desperate situations, such as starvation (Dobermann, Swift, & Field, 2017). For example, a recently released Western film presents the idea of using insects for protein bars, which is rejected immediately by the characters; similar attitudes are presented in other films and media, with the main focus being on insects, both their presence and consumption, being 'gross', or used as a punishment for failure. This sensationalist presentation does nothing to improve the attitudes of Western consumers, and only seeks to further cement negative connotations with insects. It will take a lot of time, money, and marketing to change Western attitudes to this alternative protein source.

Conclusion

If more research and development occurs in the insect sector, insects could be a viable food source environmentally, economically, and nutritionally within our lifetime. Human trials must be run to observe the nutritional benefits of insects in humans, and there must be regulations and proper farming practices established to ensure the success of the industry. The most important part of insects becoming common in our diets is Western attitudes. With time, and a change from sensationalist to useful, accurate media attitudes, Western views of entomophagy can change for the better. Our world has finite resources, so we must look after what we have, and consider all possible options for the sustainability of our future.



In Finland, a bakery brand, Fazer, is making artisanal

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