

THE FOODFACTORY PROJECT

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SUMMARY

The FoodFactory is an idea by Dutch inventor Bart Hogebrink to promote sustainable and reliable food production by industrially rearing insects for food. Insects are highly nutritious; they generally contain more protein and less fat than traditional meats. They also have higher food conversion efficiency than traditional meats. Furthermore, they reproduce much faster than cattle, are easy to raise and need far less living space.



In many parts of the world insects form a welcome addition to the sparsely food supply. But the current method of harvesting, by hand in the wild and only in specific seasons, hamper a structural contribution to a secure, steady and affordable food supply.

The idea of the FoodFactory Project is to design “factories” where insects are grown, harvested and processed in an industrial way, making the process of making insect-based food cheap and controllable in every season. As a result, food can be produced at such a low cost, that even the poorest people can afford to obtain enough food to survive, learn and work.

BACKGROUND

Insects are an excellent food source and have important advantages over usual livestock.

1. Insects generally have higher food conversion efficiency than traditional meats.
2. Insects reproduce at a faster rate than beef animals.
3. Insects have a large biodiversity. Worldwide, about 2000 insect species are reportedly eaten as food.
4. Insects have excellent nutritive value.
5. They accept relatively low quality food substrates of various kinds that are not used by people.
6. They have a short life cycle, are generally easy to breed and to conserve.
7. They can be exploited for inclusion in other food products like cookies.

Despite the advantages, insects have not become a sustainable food source because of the following reasons:

1. Insects can only be harvested during short periods of the year.
2. Over-harvesting leads to fewer insects in the following year.
3. In Africa, edible insects were never domesticated, so rearing does not occur.
4. Insect consumption is under pressure due to Western influences.
5. Poor ecological management of open wild areas where insects are collected, limit the wild population.
6. The consumption of insects is still not common everywhere, and is sometimes even a taboo.
7. The use of pesticide on crops can make insects unsuitable for human consumption.

The goal of the FoodFactory Project is to overcome these factors. One approach of the FoodFactory Project to achieve this goal is to develop a factory in which insects are reared in large amounts to serve as a cheap and continues food source for poor people, preferably starting at a location where it is already common to eat insects.

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A SUITABLE INSECT

Based on a comparison of several insect species with regard to growing time, nutritional value, popularity, and food requirements, crickets seem a suitable insect species. Crickets normally feed on living or decaying plant materials. They are not critical towards their food; they are omnivores and can feed on almost every organic material. With temperatures between 28 and 35 degrees, House Crickets have a life cycle of two to three months. They reproduce quickly; each female will lay from 50 up to 100 eggs that hatch in about two to three weeks.



FACTORY DESIGN

The factory building could be divided into separate departments. There will be a distinction between large 'breeding containers' and some smaller 'rearing containers'. Because the yield is the highest with temperatures around temperature 32 °C, this temperature has to be maintained. To keep the costs low and profit of the advantages of the non-selective food choice of crickets, biological waste materials that is collected from, for example, local farmers and forests can be fed to the crickets.

The scale of the factory depends on consumer demand, with is affected by several factors, like the price compared to other protein sources. A mature cricket weighs about 0.4g, so 250.000 crickets equal 100 kg. Per cricket an average of 0.15 liter space is needed, so for 250,000 crickets require a living space of about 37,5 m3. Additional space is required for processing the crickets.

LOCAL CONCEPT

For every location, the conditions that should be fulfilled for a feasible FoodFactory will need to be determined, taking into account the economical, social and ecological aspects.

Social aspects that could play a role are the roles of stakeholders: the local people, the local government, farmers, environmental organizations, insect catchers, schools, hospitals, shops, entrepreneurs who run the factories, etc. Other aspects are the local laws with regard to consumer protection, labor protection and public health. Furthermore, the local habits need to be considered.

The ecological aspects that could play a role are the land use, gas emission, the food conversion efficiency, the energy use and the use of water. These aspects determine the environmental impact of the factory.

The economical aspects that play a role in the FoodFactory are the potential market, the price of the food and the revenues and costs for the factory. The current target group consists of enterprising people who see the possibilities offered by FoodFactories for poor people and children at local schools. The competitors for the market are farmers, other food producers and local insect catchers.

We appreciate all knowledge, ideas and other input that can help create a FoodFactory that is self-sustaining and replicable, and as such form a significant food supply to alleviate hunger and poverty.