



# Insects in South East-Asia

## General Context

### Issues

Insects have reportedly been consumed since the antiquity, as a delicacy under the Roman Empire, and still nowadays in several parts of the world, such as Mexico and Thailand.

### Increasing population

- According to the Food and Agriculture Organization, the world's populations will grow to 8 billion people in 2024 and more than 9 billion people in 2050.

### Limited Food and Protein resources

- The gradual depletion of fish stocks is already leading to the need for alternatives
- The existing meat production model will not be able to keep up with the world's increasing meat consumption.

### Solutions

There are several possibilities and solutions which are explored to supply the world with food and feed in a more sustainable way. Algae, single cell protein, vegetable protein and insects, are interesting possibilities.

### “Entomoculture”

This unofficial but increasingly used term defines the farming of insects either for food or for feed. There are important differences between the two sectors, such as scale, substrate, process, presence, life-cycle,.... However, they share common general advantages:

- Limited inputs: Compared to traditional cow farming for example, insects are able to produce an amount of digestible protein and other nutrients for 100 times less the water required for farm cows (BSFL, see on figure 1.). Land surface, feed, and time required to reach the harvesting step are far lower.
- Valorisation: Moreover, insects can transform organic waste such as food and farming residues into valuable food and feed resources.
- Many products: Out of their digestion, insects produce a fertilizer also valuable for other farming sectors.



Figure 1: Black Soldier Fly Larvae (BSFL), Main insect as feed specie.

## Thailand

### History

Insects have been farmed since more than 20 years for the **insects-as- food** sector. It is far more than a hobby and constitutes in the whole country, and especially in the areas of production, the main source of income and a food security solution. It is important to remember that Thailand is a country for insects as food. So far there is no insect-as-feed industry except for the pet food market and at a very small scale.

### A main species

The Food and Agriculture organization conducted studies in 2013 in several South-East Asian countries, including Lao PDR and Thailand. In Thailand more than 20 000 farms for 7500 tons of production per year were counted, for only one species, the cricket. It remains the species most produced in the country today. Data are still missing on the consumption (quantities and habits).



Figure 2: Crickets in a farm, Thailand.

Other species such as silkworm, bamboo caterpillars or mealworms are also produced and but at a lower scale (no hard data available).

### Market Organization

Insects are mostly sold locally or collected by distributors to be delivered in markets in urban areas. Nationwide, 4 to 6 companies are processing insects into more familiar food products such as pasta, cakes, snacks, mostly for the western market.

## Acceptance

Acceptance constitutes a main trigger in the entomoculture market.

Let us have a look at the comparison factors in Europe and Thailand, for insects as food:

<b>Thailand</b>	<b>Europe</b>
<p>1. <u>Insects as Food:</u></p> <ul style="list-style-type: none"> <li>• Local consumption, countryside</li> <li>• Food security solution</li> <li>• Consumed in their entirety, simply cooked, "The need to see the product". (Survey October 2015, Nathan P.)</li> <li>• Limited acceptance among the middle and upper class, product for "the poor"</li> <li>• Using insects as feed: Seems strange or a waste of food.</li> </ul>	<p>1. <u>Insects as Food:</u></p> <ul style="list-style-type: none"> <li>• Consumed rarely, more in urban area.</li> <li>• "Sustainability trend"</li> <li>• Disgust aspect, more accepted when completely processed and transformed into known product.</li> <li>• Acceptance trough education on potential for sustainability. Help of Curiosity factors</li> <li>• Using insects as feed: Helps to increase the insects' acceptance.</li> </ul>

In conclusion an important development trigger for the entomoculture industry relies on awareness raising. The disgust aspect as main limitation should be easily by-passed with the presentation of all opportunities and benefits emerging from insects, as food and feed.



