Farming insects for food in Thailand

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Who eats insects?

Entomophagy = The art and culture of eating insects, a tradition at least 4000 years old
At least 115 nations eat insects in all continents (except Antarctica)
Mexico
Africa

mopane worm
China
Japan

http://tonymcnicol.com/2008/10/31/creepy-crawly-cuisine/
Thailand
What kind of insects are eaten?

Approximately 1,681 species of insects in at least 14 Orders are eaten around the world (Ramos –Elorduy, 2005)
Species of edible insects in the world

Modified from: Ramos-Elorduy (1998)
Why should we eat insects?

**Tasty**

- Excellent quality food with proteins and micronutrients

- Gram for Gram... cricket can be more nutritious than an equal quantity of beef or pork
## Nutritional value of some insects compared to chicken (100 g)

<table>
<thead>
<tr>
<th></th>
<th>Cricket</th>
<th>Palm weevil</th>
<th>Chicken</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy</strong> (kcal)</td>
<td>121.5</td>
<td>561</td>
<td>138.5</td>
</tr>
<tr>
<td><strong>Protein</strong> (g)</td>
<td>12.9</td>
<td>6.69</td>
<td>15.24</td>
</tr>
<tr>
<td><strong>Lipid</strong> (g)</td>
<td>24.32</td>
<td>no data</td>
<td>4.14</td>
</tr>
<tr>
<td><strong>Iron</strong> (mg)</td>
<td>no data</td>
<td>13.1</td>
<td>1.33</td>
</tr>
<tr>
<td><strong>Thiamine</strong> (mg)</td>
<td>no data</td>
<td>3.02</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Riboflavin</strong> (mg)</td>
<td>no data</td>
<td>2.24</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>Niacin</strong> (mg)</td>
<td>no data</td>
<td>7.78</td>
<td>5.03</td>
</tr>
</tbody>
</table>
Cricket 100 g.

1 chicken egg

Grasshopper 1 kg.

Bread and sausage

The same amount of proteins

The same amount of calories
When can we find insects?

Different edible species are available all year.
Where to find insects?

Insects can be cultured or collected
- Insect farming
- Wild harvesting
Collecting Bamboo worm (*Omphisa Fuscidentalis Hampson*)

and Wasp (*Vespula Vulgaris?*)
Collecting Stink bug, Common skimmer and Weaver ant
Farming of insects for food

Developed from an economic crisis

Two species farmed: cricket & palm weevil

Ily 1% of food species farmed
House cricket farm

Palm weevil farm
Breeding cricket

Prepare for breeding
Breeding cricket (continue)

Feeding

Cricket egg collecting
Breeding cricket (continue)

&

Harvesting at 40-50 days
Processing cricket for the market

- Wash
- Boil in hot water
Cricket product

noodle

Food bar
Breeding palm weevil

Preparation of Food Feeding

Palm stalks ➔ Machine chopping ➔ Palm pieces

Palm pieces ➔ Hand chopping ➔ Palm pieces

Sago palm
Breeding palm weevil

Breeding Method

1. Leave pupae inside the cocoon for 10-15 days.
2. Leave for 20-30 days.
<table>
<thead>
<tr>
<th>Farmed insects</th>
<th>Duration (days)</th>
<th>Income/ harvesting time (US$)</th>
<th>Cost production (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>House cricket</td>
<td>45</td>
<td>2,000-5,000</td>
<td>50</td>
</tr>
<tr>
<td>Palm weevil</td>
<td>37-45</td>
<td>3,500-4,000</td>
<td>10</td>
</tr>
</tbody>
</table>
Market pathway

- **Village markets:** unprocessed
- **Street vendors:** processed /cooked
- **Supermarket:** Frozen packets, microwave ready
Village markets
Supermarkets
Future vision

- Potential as a new protein source
- Best practice in intensive farming
- New products
- Food safety practice

Food technology

- Protein extraction
- Fun Foods/ snacks
Thank you for your attention