



Globalisation of diet: risk/benefit of insect consumption

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Conference on the impact of globalisation on the emergence of new risks
in the food chain

05/11/2014 Budapest

Outline



- Insects as food – traditions and novel initiation
- Insects – food of the history and our future?
- Why should we eat and why not? (advantage and possible risks)
- Ethical considerations
- Conclusions





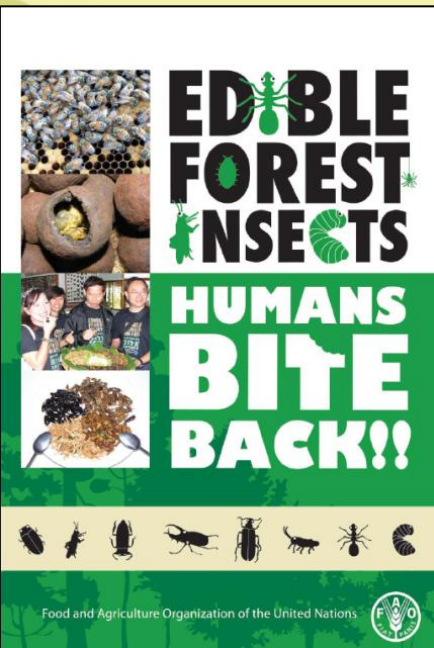
Promoting insect eating



Previous documents, events

<http://www.fao.org/forestry/edibleinsects/en/>

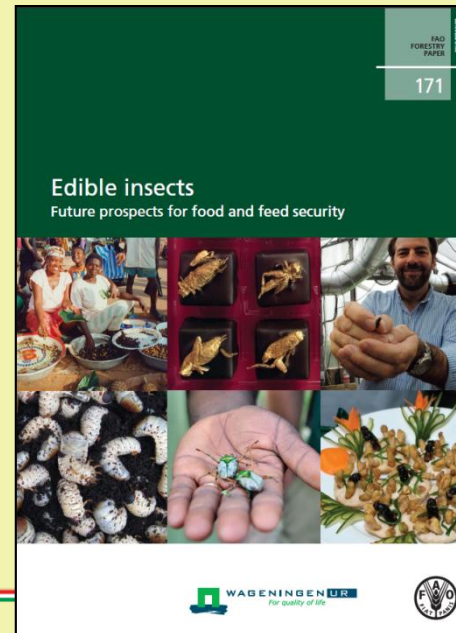
<http://www.wageningenur.nl/en/Expertise-Services/Chair-groups/Plant-Sciences/Laboratory-of-Entomology/Edible-insects.htm>



(FAO, 2008)



(FAO, 2012)



(FAO-WUR, 2013)



(2014)

Szerlánc-biztonsági Hivatal

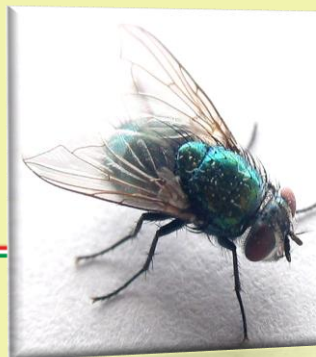
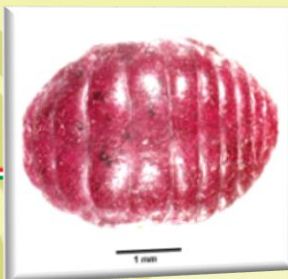




Importance of insects



- **Environment:** pollination, waste decomposition, maintaining equilibrium and biodiversity of nature, waste bioconversion
- **Products:** honey, silk, bee-wax, colorants etc
- **Medicinal:** toxins, propolis, maggot therapy, healing wounds...
- **Feed:** source of protein
- **Food:** combating hunger
improve nutrition
for pleasure





Entomophagy

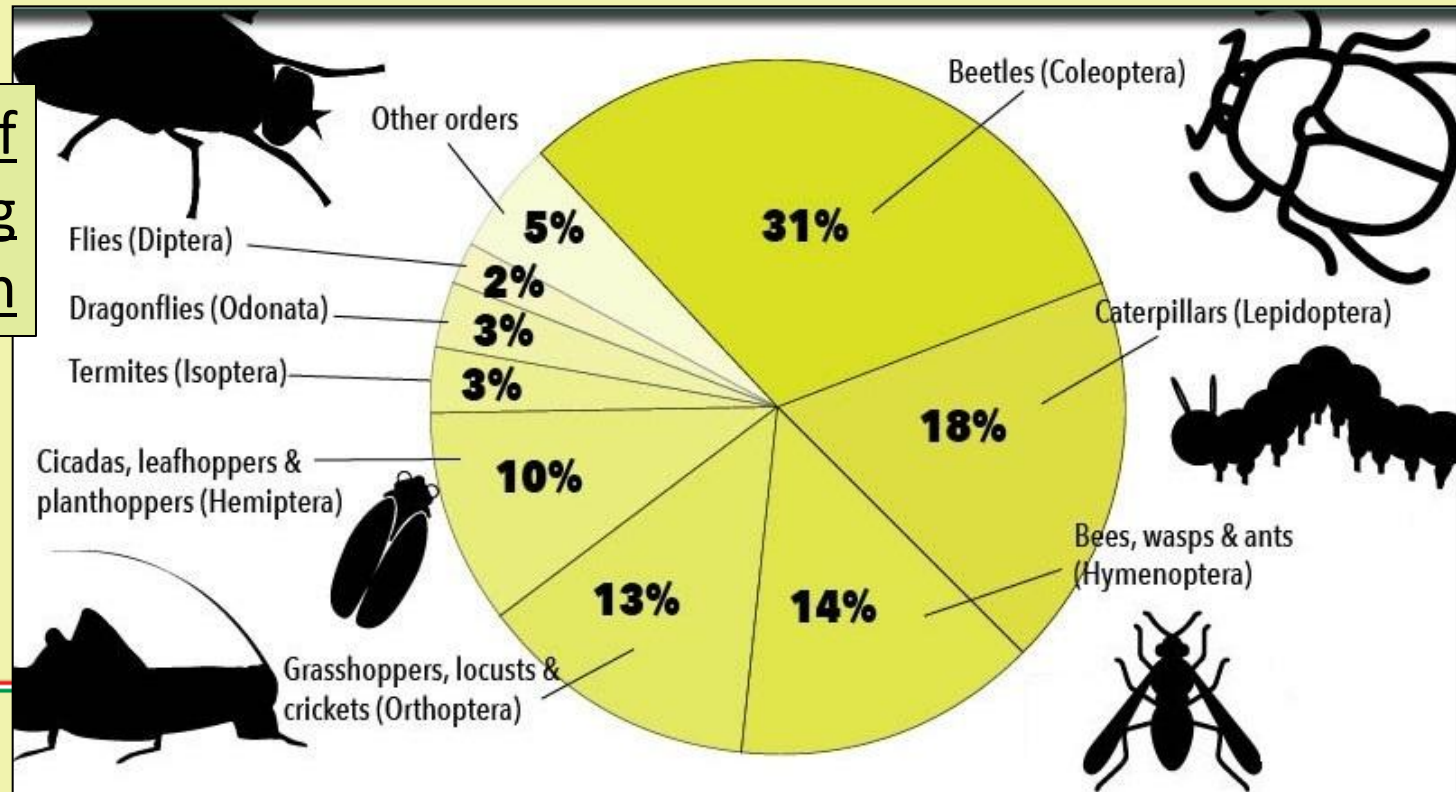


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Termőföldtől az asztalig

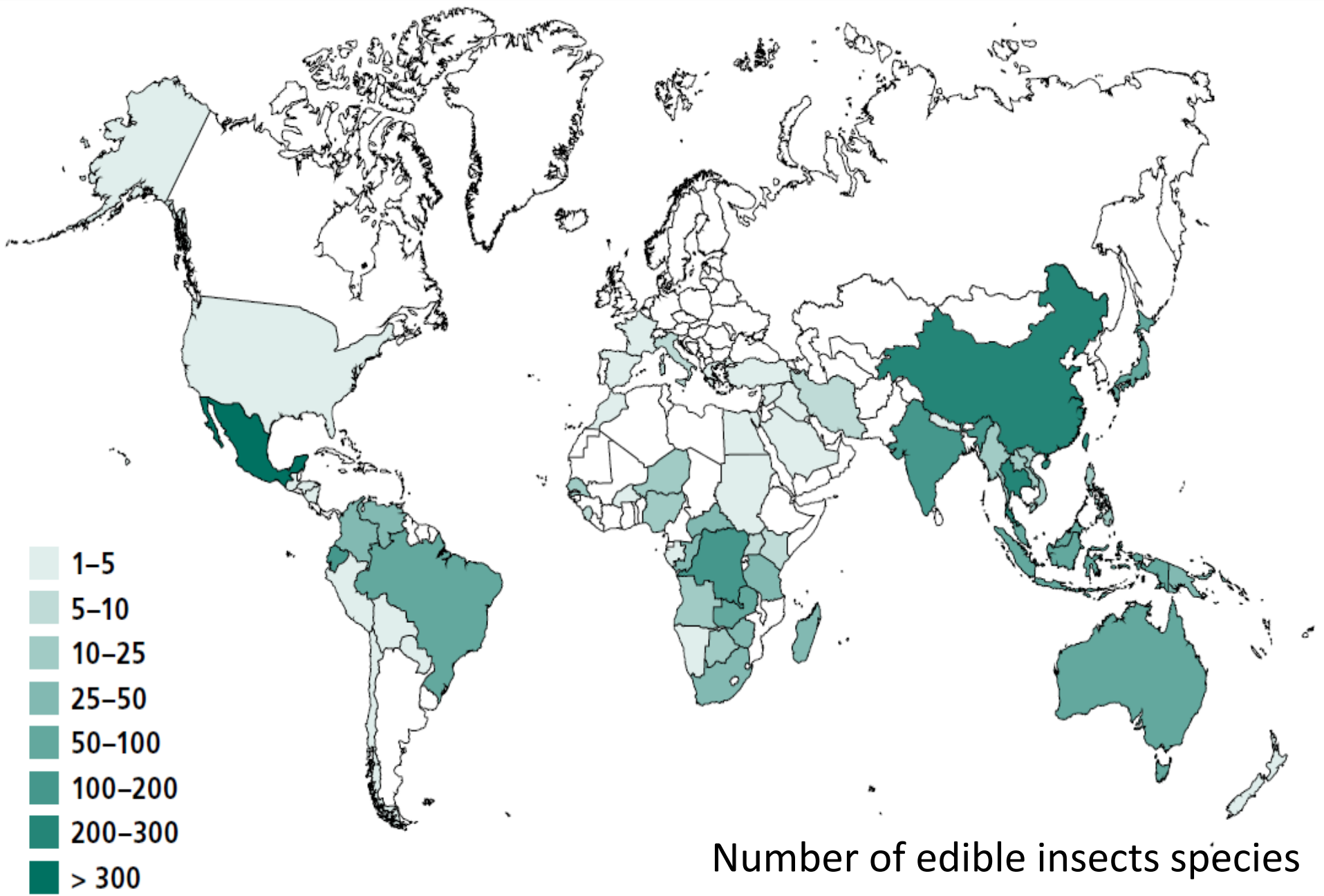
(greek. - [έντομος](#) *éntomos* = „insect” and [φάγεῖν](#) *phagein* = „eating”)

- Insects eaten by humans
- more than 2000 edible insects (in April 2014)
- in 130 countries
- ca. 2 billion people

Distribution of insects according to consumption



(Source: FAO, 2014)



(Source: FAO, 2014)

How can we get our daily insects?

- Picking/collecting from the nature
- Semidomestication
- Mass-rearing
- *Buying from market/internet*





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Why to eat insects?

Benefits



Food and feed security



Growing population (by 2050 over 9 billion)

- Increasing demand for animal-based protein
- Growing number of animals, demand for feed
- Land and water pollution, over-grazing, over-fishing, destruction of environment...

Insects are everywhere

- Reproduce quickly, can be reared on bio (food) waste
- High feed conversion rate (insect 2:1, beef 8:1)
- Used as food or feed ingredients, as well



Nutritional value

- High protein, fat and mineral content
- Rich in fibre and micronutrient
- High in unsaturated fatty acids, essential amino-acids

WinFood study

Greeninsect project



Picture: Children and Mothers participating at WinFood study

Environmental considerations



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- Low environmental footprint
 - Less water, less greenhouse gases
 - Less land-dependent
 - Insects can feed on bio-waste, such as food and human waste, compost and animal slurry
 - Alternative for traditional feed
- But:** accidental release of insects to the environment?





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Why have to be careful?

Potencial risks



Are insects safe to eat?



- Some yes, some not
- In Europe no tradition, no knowledge
- Not widely known what are edible, what are not
- Some insect produce venoms, toxins (eg. scorpions, bees, wasps), some cause allergy
- Careful hazard analysis/risk assessment needed



SOME PRODUCTS



www.hotlix.com

www.crunchycritters.com

www.selfridges.com

www.bugsoriginals.nl



Giant Waterbug x 2

Diving Beetle x 6

Big Crickets x 8

Sago Worms x 8

Premium Mixed Bugs

PARTY PACK

Salted Cooked & Dehydrated Mixed Bugs

- No Colours or Preservatives
- Boiled & Dehydrated, Not Fried
- A Good source of protein & Fibre



NET (1.1.2oz) (32g)
Best before date: 03/01/20



Ingredients: Mixed Bugs, Salt
To maintain freshness, bag also contains
1 x oxygen absorber & 1 x moisture absorber
www.crunchycritters.com
info@crunchycritters.com
[/crunchycritters](https://www.facebook.com/crunchycritters)
[/crunchycritters](https://www.youtube.com/crunchycritters)



WARNING: SCORPION MAY CONTAIN ALLERGENS. WE DO NOT RECOMMEND...

VODKALIX

Vodka flavoured lollipop with edible scorpion inside.

HACCP analysis of chain



environment

- Pathogens, pesticides, heavy metals, mycotoxins

insect

- Allergens, toxins, pathogens, chitin

rearing

- Degradation products, pathogens

processing

- Extraction agents, solvents, additives



Risk assessment



- Advisory report on the risk associated with the consumption of mass-reared insects
- *(Netherlands Food and Consumer Safety Authority 15 October 2014)*
- Main issues: microbial contamination (process hygiene criteria), toxic substances, chitin as physical hazard, allergenicity
- Potential occupational risk: hypersensitivity
- Shelf-life (1 year is OK?)
- No toxicological studies yet



FASFC, 3 September 2014



Advice 14-2014 of the Scientific Committee of the FASFC and advice SHC N^o 9160 of the Superior Health Council on food safety aspects of insects destined for human consumption

Main issues:

- microbial, chemical, physical hazards,
- allergenicity, importance of labeling,
- cross-reaction with seafood and dust-mites,
- importance of heating step before consumption

More research needed!



Legislation in the EU



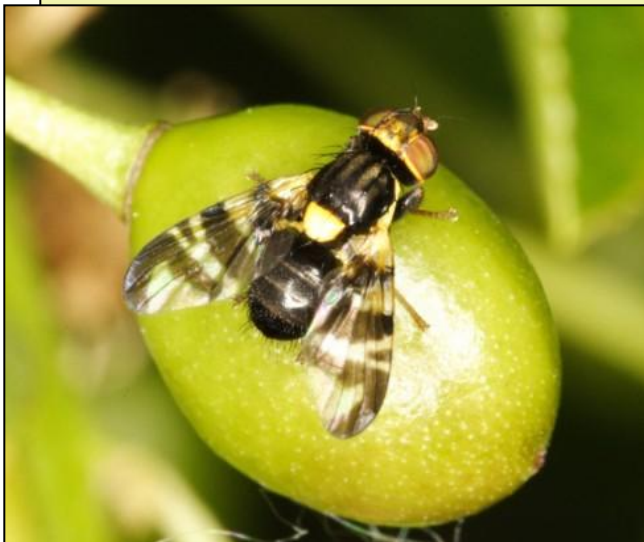
- Controversial
- Novel food? 258/97/EC
- Food of animal origin? 853/2004/EC
- Pre-market approval needed?
- And for feed?
- EFSA has been asked for RA/advice
- Guidance document is in process (DG SANCO)
- Some insects are tolerated



Questions to NEBIH



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2013 – selling

2010 – scorpion vodka

2012 – cherry with larvae



Ethical issues

- Animal welfare
- Free choice of the consumer (proper product information, labelling)
- The disgust factor („yuck factor”)



(Source: Eilenberg J., NL)

In Hungary

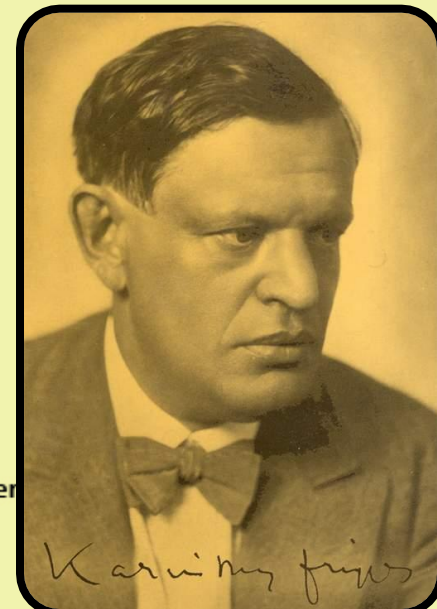
- We do not eat our friends (cats, dogs)
- Neither our enemies (snakes, snails, rats, mice etc.)
- Nor insects, worms

*„Rather eaten by worms
than eating worms”*

*„Inkább egyenek meg a férgek,
mint hogy a férget megegyem”*

(Karinthy Frigyes)

Shall we change our attitude?



CONCLUSIONS



- Insect-eating not common in EU. It should be considered novel food.
- Industrial mass-rearing of insects is new technology. It needs thorough hazard analysis (HACCP)
- Risk assessment of insect eating would be welcomed
- More microbial and toxicological research needed
- Proper labelling and consumer information inevitable
- Sound and solid legislative background is urgent since the entrepreneurs are on their way to fulfill the new demands





ENJOY!
😊



NYAMI!
😊

