

Insects: A must for a protein-rich diet

May 14 2013, by Anthony King

Arnold van Huis is an expert on tropical insects specialised in pest management and biological control based at Wageningen University. He advocates growing insects as feed for livestock and for human consumption. Here, van Huis talks to [youris.com](#) about how insects can help with food security and food nutrition problems and where new European-funded project on insects and feed, called [PROTeINSECT](#), fits in the wider efforts in this area. He also talks about cooking with insects.

Why do insects as food or feed deserve greater attention?

I am a tropical entomologist and most important for me is that people in developed countries to not think of insects as primitive [food](#), which is complete nonsense. I hope people re-evaluate this food source. Europeans never talk about insects because we have a Western bias. I hope my latest book, just published by the FAO, called "[Edible insects: future prospects for food and feed security](#)", challenges that bias. It also shows the environmental benefits of growing insects. Nutritionally it is not an inferior food; besides high levels of protein, zinc and iron levels are higher in insects. One billion people have anaemia, which is a form of iron deficiency, and around the world two billion are zinc deficient. Relying on insects can make a real difference, and not just for protein.

How can insects contribute to food security?

In the shorter term insects will be increasingly used as feed for fish and animal production in the Western world. Today, fish farms rely on fishmeal or fish oil gathered from the ocean. But overexploitation is becoming a problem and these ingredients are expensive. Soybean is used as a protein source for animal feed but it too is becoming expensive. So the feed industry is looking for alternatives and insects can be grown as high protein feed. Although it is not common in the Western world, insects can be eaten as food. That is another way insects can contribute to [food security](#).

Which insects might we grow to feed our chicken, cattle or pigs?

When you look at the insects that can be grown as feed you are talking about say mealworms, the black fly and the housefly larvae. Their protein content is quite high. I don't believe for say fish or poultry it will be a problem. And it is done anyway: chickens outside eat insects. But if you feed the insects to humans, then you have to deal with that yuck factor. That may not be as difficult to overcome as it sounds though, if you make the insects gastronomically attractive enough.

What are the challenges in producing insects for food and feed?

The problem is that we must still make it economically viable. We need to mechanise the whole system because the feed industry needs tonnes, not kilos. But we are beginning to see a whole new sector being set up. There are companies developing pilot production systems to produce large volumes every day. Normally insects are grown on trays, but there is too much labour involved. I could think of a conveyor belt where you grow each stage of the insect under ideal conditions and then maybe after two weeks it arrives at the end.

This issue is being worked on in different parts of the world and in a number of European countries, for example through the PROTeINSECT project, among others. In China, you can find large companies producing insects for feed and for food already, such as [HaoCheng Mealworms](#). If you make a calculation and replace one per cent of the current meat with insects, then already you need an enormous industry. The more people are involved the more we will come with good solutions.

What environmental benefits can insects offer the world?

We have to find more sustainable ways to feed [livestock](#), as livestock take up 70% of our agricultural land already. And the demand for meat is expected to double by 2050. Today people often feed insects on chicken feed, but it will be much more sustainable if we can grow insects on waste streams and then feed the insects to our livestock. For example, larvae of the black soldier fly and housefly and mealworms can all be grown on organic wastes. One of my students recently [showed](#) that mealworms, when considered as a human protein source, produce far less greenhouse gas emissions and require much less land than chickens, pigs and cattle.

Finally, do you have a favourite insect for snacking on or a dish you could recommend to non-insect eaters?

About once a week we eat a dish with insects. Personally, I prefer the locusts to mealworms. But it depends on the recipe and seasoning. I tasted grasshoppers in Niger that were particularly delicious; they were crunchy with some pepper. We have here replaced 50% of the meat in meatballs with ground up mealworms and given blind tasting to people. Nine out of 10 preferred the [insects](#). Our book on insect cooking is in Dutch but will be published in English later this year.

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