

Editorial: insects for food and feed

PETER FELLOWS

This themed issue of *Food Chain* focuses on recent developments in entomophagy – the consumption of insects. The papers are drawn together with the help of Paul Vantomme of FAO, where important work in this field is being carried out. As Afton Halloran et al. point out in their overview of the current status of insects in the human food chain, insects are traditionally consumed by over 2 billion people worldwide. They are one of the largest percentages of animal biomass and the most diverse group of animals on earth, with over 1 million species so far identified, almost 2,000 of which are known to be edible. So why the focus on insect consumption now? There are three principal drivers: economic, environmental, and healthy eating. The economic case centres on the rapidly increasing cost of animal feeds, especially the protein component of compound feeds for farmed poultry and fish. Perhaps the most promising potential uses for insects are as replacements for fishmeal, fish oil, soybeans, and grain. Rumpold and Schlüter from the Leibniz Institute for Agricultural Technology in Germany compares the nutrient compositions, amino acid spectra, and mineral compositions of three insect species (house crickets, mealworm larvae, and black soldier fly larvae) with soybean meal and fishmeal. He reports that insect meal can completely replace fishmeal in poultry feed and it can also replace up to 15 per cent of soybean meal. A partial replacement of fishmeal in fish feeds is also feasible, but more research is needed into variations in the amino acid composition, protein quality, and fatty acid composition of different types of insects. Both authors point out that this substitution would release large quantities of fishmeal and soybean meal for use as human food.

The environmental case for increased insect consumption centres on their high feed conversion efficiencies, their growth on organic wastes, and, compared with meat production from animal rearing, their low requirements for land and water and lower emissions of greenhouse gases and ammonia. The nutrient compositions of insects that have been studied also indicate that they are a healthy alternative to meat-based diets. As Paul Vantomme points out, these factors make insect farming an attractive and timely option to contribute to a more sustainable global food supply. I report on some commercially oriented research, examining developments in the sales of insects in high-value Western markets. Although there is no tradition of entomophagy in Western industrialized countries, there are increasing numbers of companies that sell insects as novelty snack foods or gifts, or as ingredients in restaurant meals. Novelty insect foods and gifts in particular can be extremely lucrative, with many selling for US\$300/kg or more. The increasing availability of internet connectivity may result in small-scale insect processors gaining direct access to the high-value markets of consumers in industrialized countries.

Peter Fellows (pfellows@btinternet.com) is a freelance consultant food technologist based in the UK.

© Practical Action Publishing, 2014, www.practicalactionpublishing.org
<http://dx.doi.org/10.3362/2046-1887.2014.010> ISSN: 2046-1879 (print) 2046-1887 (online)

I have also included three non-themed articles in this issue: first, Kevin McKague from the Ross School of Business at the University of Michigan reports on the new field of measuring and evaluating business contributions to poverty alleviation. Using research carried out in Bangladesh with a large dairy company, smallholder farmers, and the development agency, CARE, he reports on four categories of business benefits that arise from companies measuring their poverty reduction impact: reduced costs and improved efficiencies; better recognition of business opportunities and risks; an enhanced reputation and legitimacy within the country of operation; and improved access to loans from development banks and other non-financial resources such as technical assistance. He cites case studies of four frameworks that have been used by multinational companies to measure their contribution to poverty alleviation. Second, there is a survey reported by Noël Houédougbé Akissoe and his co-workers from the Université d'Abomey-Calavi in Benin on the diversity of processing techniques, consumers' characteristics, and the quality attributes of 'gowe', a traditional fermented beverage made from malted sorghum and/or maize. Third, Arantxa Guereña and Stephanie Burgos of Oxfam are critical of the impacts of large-scale commercial agriculture on smallholder farmers and also pessimistic about attempts to integrate smallholders into value chains.

Finally, there are our regular features of book reviews, conference report (on insect consumption, held at Wageningen) and upcoming events. There are summaries of *The Insect Cookbook: Food for a Sustainable Planet*, by Arnold van Huis, Henk van Gurp, and Marcel Dicke, and FAO Forestry Paper *Edible Insects: Future Prospects for Food and Feed Security*. Patrick Mulvany reviews *Farmageddon: The True Cost of Cheap Meat* by Philip Lymbery with Isabel Oakeshott, pointing out the waste involved in shipping fishmeal around the world, with insects providing a potential alternative to fishmeal for animal feed. Ben Bennett reviews *Food System Failure: The Global Food Crisis and the Future of Agriculture*, edited by Christopher Rosin, Paul Stock, and Hugh Campbell.

Peter Fellows