Women selling giant crickets at a market in Mandalay, Myanmar.

Photo: Sarah Nischalke

Insects for dinner?

Insects are an important source of protein for many people in the Global South. From an environmental perspective, too, they are increasingly being viewed as an alternative to conventional livestock rearing. However, the potential of insects to improve both nutrition and livelihoods is still far from being fully utilised. The ProciNut project seeks to change that.

By Sarah Nischalke

Since the EU's Novel Food Regulation entered into force in 2018, insects as a novel food have become a talking point both in Europe and elsewhere. At least, many people in the Global North have probably tried insect pasta or protein bars so that they can join in the conversation. However, insects have yet to feature regularly on our everyday menus. In many countries of the Global South, on the other hand, insects have traditionally made an important contribution to people's diets and are a normal part of the food culture. For many small-scale farmers – especially women – they are also an important source of income. People living in rural areas often eat little meat: although almost all smallholders keep animals, they usually sell them, need them as a form of social security, or slaughter them only for special occasions. Insects are therefore a welcome source of additional high-quality protein. And they supply families not only with protein that contains all the essential amino acids but also with a range of micronutrients and vitamins. Their energy value is comparable to that of the meat of mammals and birds, with a protein content of 30 to 60 per cent.

Tapping the potential

The consumption of insects has been documented in 118 countries, with the number of insect species that are used as food totalling around 2,100. Most of these species are beetles, hymenoptera (bees, wasps and ants), grasshoppers and butterflies. In terms of environmental impact, too, insects potentially have major advantages over conventional livestock because they have a very efficient feed conversion rate, produce few greenhouse gases (especially at the warm temperatures which form their preferred living conditions) and need little space and little water.

The ProciNut project (Production and processing of edible insects for improved nutrition; see Box on page 22) is seeking to disseminate knowledge of the benefits and techniques of insect production and processing in East Africa and South-East Asia, with a focus on Madagascar and Myanmar. Until now, almost all the insects eaten in these countries have either been collected in the wild or – in the case of Myanmar – imported from Thailand and China. The project wants to train interested small-scale producers in insect production, establish the first marketing pathways and also use insects to make local snacks. Caca pigeon, for example, is a very tasty salty cracker from Madagascar that could be made from cricket flour. In Myanmar, shrimp powder (Pa-Zon Chauk Mhont) is traditionally sprinkled on food by almost everyone, and insect flours could be used in the same way. The project's long-term goal is to improve the access of local communities to sources of protein and open

up an additional income option for these communities. An essential element of the project is awareness-raising at political level, among the advisory services and at the key universities to alert these bodies to the potential of insects in nutrition and as a source of income. This work is conducted mainly via training sessions and policy dialogue meetings.

But what are the details of insect consumption globally? With the exception of Thailand and China and, recently, the Global North, most of the insects that are eaten are collected in the wild or caught by professional insect collectors using light traps and similar technology. In rural areas, collecting usually involves the whole family and is often combined with other activities, such as gathering firewood or harvesting wild plants. At times of insect plagues, the creatures are also collected from the fields and then prepared and eaten or dried and fed to animals. But it would be inappropriate to class insects as a rural food or a poor person's meal. Insects are sold in the markets, where they command higher prices than fruit and vegetables and are often more expensive than some meat and fish, and they are served in restaurants in a wide range of price brackets. For example, at the market in Myanmar a portion of giant crickets (50 insects) costs 7,500 kyats (equivalent to 4.40 euros), while in the "Insects in the Backyard" restaurant in Bangkok, a main course such as cricket pasta with pesto and silkworms sells for between 10 and 15 euros.

Linking tradition and modernity

The term "traditional" could lead one to suppose that insects are eaten mainly by the older generation but here, too, practices vary widely between regions. When our interview partners in Myanmar were asked whether children and the younger generation rejected eating insects as old-fashioned, they stated that children never refused insects when offered them and that for many they were one of their favourite foods. In urban areas – especially in central Myanmar, where eating insects is less common, and in Thailand – there are signs that young people who have not grown up with edible insects are returning to the old food traditions. They sit in a bar in the evenings and enjoy crisply roasted giant crickets with their beer or order home delivery of a portion of silkworms dressed with garlic or herbs.

In the urban areas of Madagascar, on the other hand, there is a noticeable divide between the generations. The older generation have grown

A helping of bamboo borer at the Crokmai Thai Lao Restaurant, Bangkok.

Photo: Ingo Wagler

up with edible insects and associate them with positive childhood memories, while members of the young urban generation, if they accept insects at all, want them on their plate only in processed form. By contrast, interview partners across all age groups in Myanmar and Thailand stated that it was precisely the crisply roasted insects' bodies that made them appealing to eat and that the sensory experience was lacking when insect flours were used.

Culture and religion play a significant role

Eating insects is not the preserve of specific social classes, but it often has an ethnic dimension and cultural and religious aspects also come into play. In the Global North, there is no tradition of eating insects, while in the Global South it is often certain ethnic groups – and not necessarily marginalised or poor ones – that generally eat insects or eat a particularly wide range of them. In Myanmar, for example, an especially diverse range of insects is eaten in the region bordering Thailand and China, where culturally, too, the practice is associated with certain ethnic groups. Farmed insects are also widely accepted there, and people are aware that production is actually possible and can be lucrative. The largest ethnic group in Myanmar, the Barmar, who live mainly in the centre of the country, do not traditionally eat insects and the interview partners state that, in line with the current trend, they eat "only giant crickets".

As a result of the Buddhist belief that killing animals is associated with bad karma, followers of Buddhism are particularly likely to have reservations about insect production and reject the "mass killing" of insects. In the region bordering Thailand, where Buddhists live among other religious groups, this attitude is less pronounced and does not present an obstacle. The project's first training programmes and trials therefore focus on this region of Myanmar (Shan and Kayin states). In other parts of the continent, such as South Asia, insects are generally regarded as an unclean food, and eating them is widely seen as a backward practice; insects tend to be eaten only by marginalised ethnic groups such as the Adivasi or only in particular areas, including large parts of the Indian north-east. Followers of Hinduism and Islam refuse to eat insects. Religious affiliation thus plays a significant role.

Why insect rearing instead of collection?

There are good reasons to prefer insect rearing over collection in the wild. In some cases, it is the females of the insect species (such as giant crickets and water beetles) that carry eggs in their abdomen that are a particular delicacy and fetch very high prices. But the rise in urban consumption and professional capture is putting insect populations under growing pressure. Another problem in relation to the consumption of insects gathered in the wild is

THE PROCINUT PROJECT

The ProciNut project (Production and processing of edible insects for improved nutrition) at the Center for Development Research (ZEF) at the University of Bonn, Germany, is researching the edible insect sector in Madagascar, Myanmar and Thailand. The project runs from mid-2018 to mid-2021. It is financed by the German Federal Ministry of Food and Agriculture (BMEL) and implemented in cooperation with local universities.

The first trials of the production of local insect species were successful. For example, feeding experiments were conducted at the local universities with wild silkworms, grasshoppers and giant crickets. In all three countries, policy events and initial training sessions for smallholders have been held. Interest in insects as a livelihood option has been shown not only at the political level but also by development organisations such as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Danish International Development Agency (Danida). The local universities have initiated other insect projects on their own, too.

Smallholders getting cricket training in Kengtung, Myanmar.

Photo: Jochen Dürr

that they may be contaminated by the accumulation of chemicals used in agriculture.

For this reason, as well as on economic grounds, the Thai government was prompted some time ago to start providing significant support to the insect sector as a branch of the economy. Training centres were set up and consumer awareness was raised through tasting opportunities. The aim was to popularise insects that are particularly suitable for farming but not yet a preferred food – in other words, to align people's tastes with production. In Thailand in the 1990s, giant crickets were favoured as a food. The smaller cricket species (house crickets, field crickets, etc.) are now much more commonly eaten, because their short life cycle and simpler rearing requirements make them more lucrative, and in taste and consistency, they are a delicious alternative to their larger relatives.

In Madagascar, too, there is significant political support. The Ministry of Agriculture is very interested in insects as a source of both food and feed; as a result, insects are even included in the National Nutrition Plan and promoted both nationally and regionally by the Office National de Nutrition (ONN), which has therefore become an important project partner. At implementation level, though, small-scale farmers lack the help they need on every front. They have neither the time nor the financial capacity to make even the smallest investment or try out new agricultural activities. At the same time, significant protein deficits in people's diets and widespread poverty make Madagascar the most needy project region. As a solution, attempts are now being made to get microfinance institutions on board.

The gender aspect

The ProciNut project is also trying to kick-start research into gender aspects in the innovative milieu of edible insect production. Rearing insects requires only a small investment, because they need little space and little food and water. Simple plastic boxes, nets or cement constructions in the backyard are often sufficient. Because the insects can be reared at the back of the house, women are often particularly happy to take up insect production, which combines well with their domestic activities. Whereas the collection of most insect species can be done by all household members, harvesting some species may be a strenuous physical task and is mostly done by men. Chopping up bamboo canes to collect bamboo worms and setting up light traps to attract giant crickets in Myanmar, for example, are tasks performed entirely by men.

It is not only small-scale production that is frequently dominated by women. The marketing and processing of edible insects also tends to be their preserve. This is a reflection of the fact that in the Global South, it is usual for certain types of production – such as growing fruit, vegetables and field crops or tending livestock – to be performed either mainly by women or mainly by men. Edible insects tend to be regarded as a job for women (with the exception mentioned above). However, in small-scale farming in the Global South, it is also frequently noticeable that as soon as an innovation that involves women reaches a certain level of profitability and exceeds the household's own requirements, it is taken over by men and scaled up.

A great potential, but still a lot to do

One of the project's most important realisations is the fact that people who eat and collect insects are not automatically interested in producing them. There is a widely held view that insects gathered in the wild are of better quality, and many people are unaware that farming insects is even possible. In both project regions, production is still at a very early stage, and a great deal of educational work is needed to make people aware of the advantages of including insects – which they are already eating – in their diet and to raise awareness of the opportunities and potentials of insect production. Extensive research is also needed into the suitability and cost-effectiveness of local species and the best production conditions for them.

While the specific findings on local species are only to a limited extent transferable, lessons learnt with regard to the establishment of the insect sector are also of great interest for other countries. A basic requirement for the successful development of the sector is the cultural acceptance of eating insects. Conventional animal husbandry is based on centuries of experience, while scientific knowledge of insect use is still in its infancy. The opening up of the Global North to edible insects (keeping in mind that the potential for feed insects in meat production is significantly higher) and the emerging trends in the Global South could provide considerable impetus for the further development of the insect sector.

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References: **www.rural21.com**