



Production & Processing
of Edible Insects for
Improved Nutrition

ProciNut

Production and Processing of Edible Insects
for Improved Nutrition

Project update 2018

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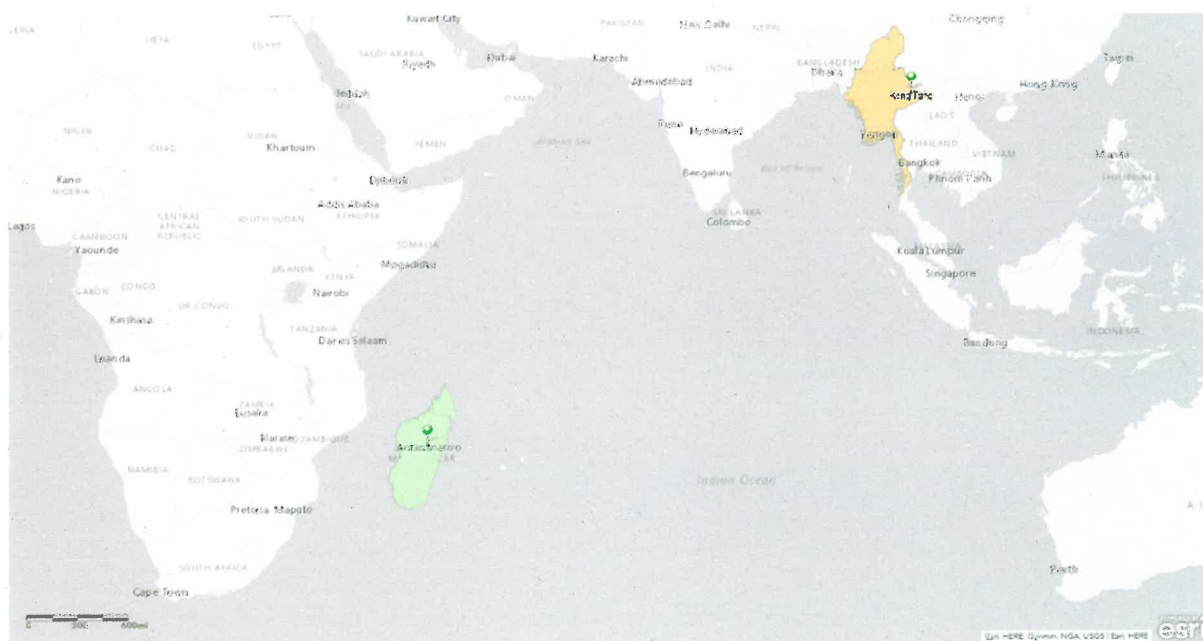


Institute of Nutrition
Mahidol University



YAP ADALA NO TUA AN ORUM

Geographical focus:	Madagascar and Myanmar (and Thailand)
Call reference:	
Project title:	ProciNut - Production and Processing of Edible Insects for Improved Nutrition
Cooperating partners:	FOFIFA (Madagascar), HBRS-IZNE (Germany), INMU (Thailand), Spectrum SDKN (Myanmar), UoA (Madagascar), WHH (Madagascar), YAU (Myanmar)
Duration:	01.03.2018 – 30.06.2021
Budget:	1.065.052,16 € (as of February 2019)



Aim of the project:

The ProciNut (Production and Processing of Edible Insects for Improved Nutrition) project aims at better exploiting the nutritional and economic potential of edible insects. It tests different processing techniques of local insect species and expands commercial small-scale farm activities and processing to produce safe and nutritious end products that are able to close seasonal gaps, increase nutritional security of households and improve the economic situation of poor women in Madagascar and Myanmar.

Results:

Ex-ante Analysis: After conducting two interesting ex-ante analyses in Madagascar and Myanmar/Thailand the ProciNut team now had the needed information to decide on which species the project will work and where. Also the next activities such as the first insect rearing trainings in both countries and the first round of policy dialogues are currently under preparation.

The ProciNut team decided jointly that in Madagascar the most promising species for production and processing would be locusts (*Cyrtacanthacris tatarica* and *Gastrimargus africanus*), house crickets (*Acheta domesticus*), wild silkworm (*Borocera cajani*) and for feed purposes the black soldier fly (*Hermetia illucens*). Reasons for selecting these species were the high acceptance among locals and their need for livelihoods, suitability of the species for

rearing and first experiences of the researchers with the species. The project region is Sandrandahy, where insects are widely consumed, liked and accepted, and where protein and livelihood sources are scarce.

In Myanmar the four species that were selected by the team for trials are house crickets (*Acheta domesticus*), which were widely demanded by the local population, red palm weevil (*Rhynchophorus ferrugineus*), bamboo borer (*Omphisa fuscidentalis*, for passive rearing) and the black soldier fly (*H. illucens*) for feed purposes. In Myanmar, different insect species are linked to different locations. The first selected research location is Kengtung, which is in close proximity to Thailand, China and their markets. It has a large variety of insect consumption and acceptance, not very diverse diets and very limited livelihood options especially for young people and women. This location is suitable for cricket rearing and passive rearing of bamboo borer. The interest in black soldier fly still needs to be explored. For the palm weevil, the project will have to look for a second location closer to the coast.

WP 1: Mr. Ingo Wagler, doctoral candidate at ZEF has already started the research on policy and governance with a field visit in Myanmar and visits to Thailand in January 2019. It will be proceeded end of June in Madagascar. The research on value chains was recently started with fieldwork in Yangon as the first and principal market of Myanmar by Ms. Myint Thu Thu Aung, doctoral candidate at ZEF. She will continue the value chain analysis in May and June 2019 with visits to Kengtung and the border area of Thailand and China.

WP 2: Currently the cricket rearing trials at Yezin Agricultural University (YAU), led by Dr. Aye Aye Myint are progressing. The objective is to gain experience with the insects which were collected from the wild and to produce one whole development cycle of crickets. In Madagascar, the PhD candidate on insect production at the University of Antananarivo, Mr. Andrianantenaina Razafindrakotomamonjy conducted an inventory of the wild insect species in the research area using different capturing techniques end of 2018. He also started feeding pre-trials with locusts and crickets in the laboratory of FOFIFA in Antananarivo. The objective is to gain experience and further train the doctoral candidate on insect rearing and scientific methods.

At the same time, laboratory research on processing was planned and prepared in both countries. In Thailand, the PhD candidate at INMU, Mr. Nathan Preteseille, prepared to test the impact of four different processing techniques on the micro and macro nutrient profiles of end products. He received hands on training on laboratory analysis techniques and standards at the Insect Biology Research Institute (IRBI) in Tours, France and at Kasetsart University in Bangkok, Thailand. In Madagascar, the PhD candidate Mr. Christian Ratompoarison prepared to conduct nutritional analysis comparing wild insect material with farmed insect material of selected species. He also plans to develop a locally adapted and user validated drying technology using a hybrid dryer, based on solar and electric energy, and to analyse the shelf life of dried insect material under different types of packaging. The objective is to finally develop new end products based on insect powder that will be evaluated with consumers.

WP 3: Based on results of the ex-ante analysis, Dr. Jochen Dürr developed a draft curriculum for gender-sensitive training courses for stakeholders in Madagascar and Myanmar composed of five modules on 1) Introduction: insects as food and feed; 2) Nutrition and food security; 3) Insects for a healthy (nutritious and safe) diet; 4) Safe and sustainable insect rearing; and 5) Safe, cost effective and time saving and locally adapted insect processing and preservation. The draft curriculum was shared with project partners for review and local adaptation and will further be refined.

Prof. Dr. Martin Hamer and Dr. Darya Hirsch (IZNE) established contacts to insect experts of NGN, the University of Wageningen and HAS University of applied sciences. The ZEF team got the opportunity to get an introduction to their projects and facilities and to visit insect rearing facilities of the private sector and insect laboratories at the university. These experts could potentially serve as resource persons during ProciNut training courses. However the cost effectiveness has to be evaluated in view of other possible experts near the project region.

With regard to training courses in Myanmar, a small workshop was organized by Dr. Sarah Nischalke with a group of individuals in Kengtung who had joined an excursion on edible insects to Thailand led by WHH and GIZ in 2016 and their needs, interests and potential for joining the ProciNut insect trials was discussed. They are especially keen on cricket rearing and will be invited to take part in a first sensitization and training course in Kengtung.

WP 4 and scientific coordination: Recruitment of doctoral candidates was carried out between March and September 2018. All except one doctoral candidate and all senior scientists from ProciNut partner organizations took part and enjoyed an intensive, informative and productive inception workshop. Despite time constraints due to the late arrival of colleagues from Madagascar, participants understood the scientific, capacity development and administrative management sides of the project and sketched a time plan of activities until the first quarter of 2020. A project dinner, insect market and restaurant visit and many coffee break discussions promoted team building and relationships between team members.

Frequent meetings at ZEF and skype conference calls with project partners for scientific updates and information exchange, detailed planning of activities, clarifying administrative questions and general project management were launched by Dr. Simone Kathrin Kriesemer.

Key statements

- It was confirmed that edible insects in Madagascar and Myanmar are a prominent and well accepted food source and a viable livelihood source
- Insect rearing and processing in both countries is underdeveloped and needs awareness building, policy support and training for the target group, extension services, policy level and consumers
- Most insect value chains are local or regional - the integration of all stakeholders along the chain in the project process is essential for the sustainability of project activities

Policy advice

In both countries, awareness on relevance of insects for nutrition and potential of mini farming for livelihoods is limited. Therefore, policy dialogues and awareness events are needed and important for project implementation as well as future upscaling of the sector. In Madagascar, ProciNut has strong support from ONN (National Nutrition Organization) who has integrated insects into the National Nutrition Action Plan (PNAN III), but lacks concrete implementation strategies. In Myanmar, government support is indispensable for research and capacity development activities. Therefore, a large awareness event in Nay Pyi Taw, the capital of Myanmar with a wide variety of stakeholders is planned to increase awareness among government and research and generate more support.



Figure 1: FGD with insect cards, Kengtung



Figure 3: Palm weevil larvae, one profitable insect in the market



Figure 2: Small-scale cricket farmer, Thailand