Production and Processing of Edible Insects for Improved Nutrition

Which Edible Insects Can Be Found in the Amoron'i Mania Region of Madagascar?

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Background

➢ **Nutritional situation of the Malagasy population:**

- 24 out of 154 communes on a nutritional alert 73 in a state of emergency
- In 2012, Madagascar ranked 4th in the world for stunting of children under 5 years prevalence rate of 47.3% (PNAN III, 2018)
- **Case of the Amoron'i mania region: around 30% population is food insecure**

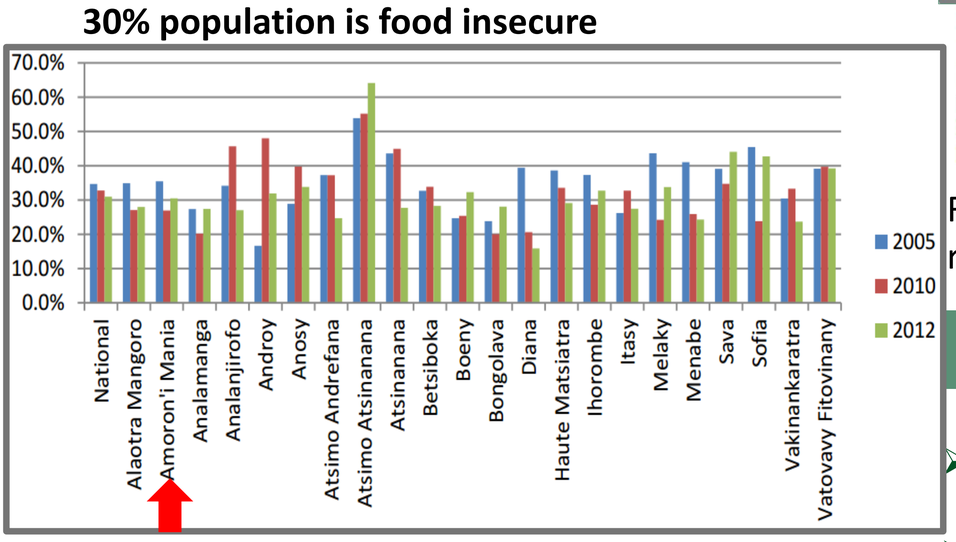

Fig.1: Evolution of food insecurity (2005, 2010 and 2012) at the regional level

➢ **Entomological situation:**

- exceptional tropical natural biodiversity (Myers et al., 2000), characterized by the presence of different species in different types of ecosystems

➢ **Entomophagy:**

- Consumption of insects or "entomophagy" prevalent in many regions of Madagascar
- Already 53 species of edible insects were identified (Randrianandrasana al., 2015)
- Preliminary investigations by ProciNut project in the Amoron'i Mania region for edible insects initiated

Objectives

- Inventory of edible insect species in the region Amoron'I Mania
- Collecting different stages of insects for Identification of prevalent species of edible insects
- Sampling for mass rearing and nutritional analyses

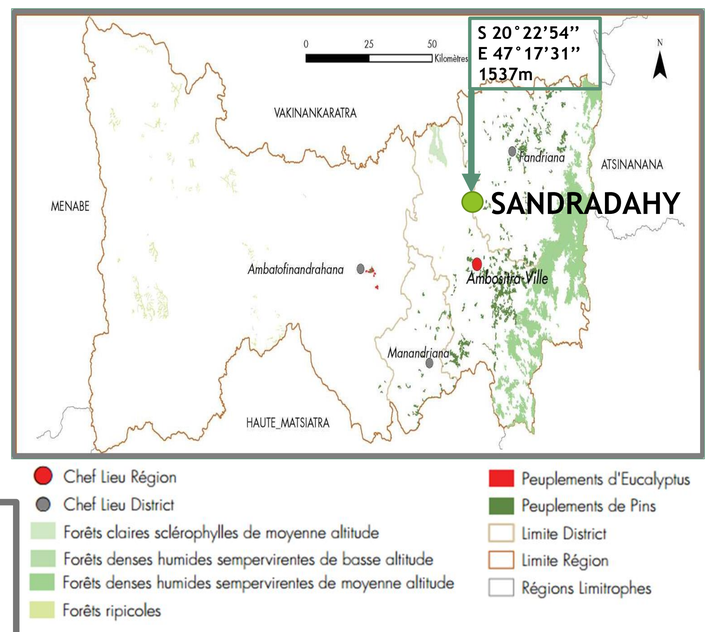

Fig.2: Map of forest cover Amoron'I Mania region, Source: FTM 2000

Materials and Methods

➢ Locality: **SANDRADAHY Amoron'I Mania**

➢ Population level survey

➢ Prospecting period

➢ Prevalent and edible species, periodicity, abundance

➢ Confirmation of prevalence by entomological survey of forest strata (herbaceous, shrub, tree)

➢ Entomological materials: Japanese umbrella, filleting net, butterfly net, Malaise trap.

➢ Identification of captured insects:

- in the field
- using specific determination works
- the reference collection of insects

Results

Two listed edible insect orders:

➢ **LEPIDOPTERA,** *Borocera cajani* **on shrub layer** *Aphloia theiformis*

➢ **ORTHOPTERA two locust species:** ***Cyrtacanthacris tatarica*, *Gastrimargus africanus*** on herbaceous plants, are not in the list of locusts pests.

Tab.1: List and photo the edible insect

NAMES	PHOTOS	EDIBLE
LEPIDOPETERA LASIOCAMPIDAE *Boroceras sp*		**CHRYSALIS**
ORTHOPTERA ACRIDIDAE *Cyrtacanthacris tatarica*		**ADULT**
ORTHOPTERA ACRIDIDAE *Gastrimargus africanus*		**ADULT**

Photo : Abbott Nature, FAO, Rajib

Discussion

- The results we have acquired serve as information on the edible insects project.
- Number of significant edible species
- Easy species reared domestically without heavy equipment
- High nutritional values of edible species: LEPIDOPTERA 293-762 Kcal ORTHOPTERA 362-427Kcal (Codex alimentarius FAO, WHO 2010)
- Use of edible insects to compensate for the nutritional deficiencies of the very favorable population
- Additional studies will be needed for the identification of other edible insects for animal feed.

Outlook

- Additional studies will be needed for the identification of other edible insects for animal feed.
- Promotion of rearing at the local level
- Popularization of insect consumption in the culinary culture of the population

TROPENTAG 2019 : "Filling gaps and removing traps for sustainable resources management" September 18 - 20, Universities of Kassel

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ProciNut is financially supported by the German Federal Ministry of Food and Agriculture (BMEL) based on the decision of the Parliament of the Federal Republic of Germany through the Federal Office for Agriculture and Food (BLE)

With support from Federal Ministry of Food and Agriculture by decision of the German Bundestag