





Production and Processing of Edible Insects for Improved Nutrition

"An alternative source of food and protein: the domestication of a wild Borocera cajani (Vinson, 1863) insect in Madagascar. "

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BACKGROUND

Food habit

- \checkmark Malagasy farmers have a less varied diet.
- ✓ 42% of households consume a poor or limited diet(cereals, tubers, vegetables a few days a

OBJECTIVES

✓ Domesticate *B. cajani* to easily obtain pupae as an alternative source of protein and food.

RESULTS



week).

- \checkmark Rarely eat foods rich in protein (meat, fish and dairy products).
- **Amoron'i Mania region and Entomophagy**



Fig. 1: Map of the region Amoron'l Mania

- ✓ The Amoron'i Mania Region is the Central Highlands of Madagascar,
- \checkmark The rate of food insecurity is 30 %.
- ✓ Insect consumption has been practiced a long

 \checkmark Reduce the pressure on this wild species to preserve it.

METHODOLOGY

- Obtained a complete life cycle of B. cajani with a duration of 102 days.
- The time from 1st instar to pupae (the stage to eat) is **51 days**.
- Initially, 200 stage 1 larvae arrived in 140 pupae on average.
- The average weight of a chrysalis is **1.68 grams**.

Larval and chrysalis stage duration

- time.
- \checkmark The population collects insects in the forest.
- Nutrition projects in the Amoron'i Mania region in Madagascar
- Plan National d'Action pour la Nutrition-III (PNAN III) 2017-2021 with ONN "Améliorer l'état nutritionnel de la population
- Malagasy, en particulier les plus vulnérables" **PROCINUT 2019-2021**
- "Production and Processing of Edible Insects for Improved Nutrition"
- Wild species
- ✓ *Uapaca bojeri* (Euphorbiaceae), commonly known as Tapia, plant endemic to this region, forming the wild forest of Tapia
- ✓ Tapia is the natural habitat of the *B. cajani* (Lasiocampidea, LEPIDOPTERA) ✓ Other host plant*B*. *cajani* : Psidium guyava

- Fig. 2 : B. cajani stage 4 larvae on P. guyava leaves
- Study site
- Laboratory Entomology FOFIFA MADAGASCAR
- \checkmark Rearing room equipped with a radiator and a humidifier to have a T 24°C H.R 70% at all times.
- Experimental design
- ✓ 4 prefabricated white tulle cages (40 cm x 40 cm x 40 cm)
- Each cage contains 50 L1 larvae, fed with young twigs of *Psidium guyava*, replaced every 2 days.





Fig. 5 : Larval and chrysalis stage duration

CONCLUSION

- \succ Replacing the leaves of Tapia by the leaves of *P.guyava*, *B.cajani* develops well through the different stages (eggs, larvae, chrysalis, adult).
- Possible to domesticate this wild

- \checkmark B. cajani a bivoltine species with 2 generations per year (January-March, and April-November)
- \checkmark Chrysalis of this insect are eaten by people.
- ✓ Bush fire perpetually threatens the *U. bojeri* forest and the massive gathering of pupae can lead to the disappearance of this species.

species to reduce threats.

- \succ Obtaining pupae at the end of rearing is a source of food and protein.
- \succ The analysis of the nutritional value of chrysalis raised with *P. guyava* leaves is an open line of research

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