



Tropentag, September 15-17, 2021, hybrid conference

“Towards shifting paradigms in agriculture  
for a healthy and sustainable future”

## Mini-rearing of Edible *Gryllus Bimaculatus* at Farmers' Level in Madagascar to Have Healthy and Sustainable Protein

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### Abstract

In Madagascar, a third of households are in a situation of severe food insecurity and a large majority of the population has an insufficient diet in terms of quantity or quality. According to the National Office of Nutrition, the Amoron'i Mania Region is among the most affected regions with a food insecurity rate of 30%. Insects can be used as a source of animal protein, the average content of which is 28 g / 100 g compared to meat of 19 g / 100 g of fresh material. Raising insects is much easier and cheaper than other types of farming. Crickets are the most successful example of insect farming for human consumption in the tropics. We chose the two-spotted cricket *Gryllus bimaculatus* which occurs naturally in the region. The objective of the study was to optimise the housing for insect production. Six rearing rooms with a dimension of 2 m × 2.50 m × 2.45 m each were built with specific structures to stabilise the temperature and relative humidity inside, to minimise the temperature variation between day and night, characteristic of a tropical climate. Various feeds were fed to the crickets raised such as pre-prepared foods for poultry and kitchen waste vegetables. The climatic conditions of the room during the experiment are  $28 \pm 2$  °C for temperature, and  $82 \pm 10$  % relative humidity. The results on feeds are: out of the 200 first instar larvae at the start, we obtained 130 to 132 adults with a development period of 30 to 43 days. The average adult fresh weight ranged from 1.06 to 1.50 grams. To sum up, this is a successful production, the room offers the optimal climatic parameters for rearing. The larval survival rate was 66 % which is questionable. Adult developmental period and fresh weight are comparable to previous laboratory results. The adults from this breeding were eaten directly after cooking or dried and processed into powder. The sustainability of this rearing will be ensured by the local availability of feed and the insulation performance of the room.

**Keywords:** Cricket, food security, insect consumption, production, rearing room