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“Filling gaps and removing traps
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Developing Processing Technologies of Edible Insects with Innovative Approaches to Enhance Rural Nutrition in Madagascar

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Abstract

The richness of flora and fauna biodiversity with more than 80 % endemism is an asset for rural nutrition in Madagascar. The wild resources collected by communities (plants, mushrooms, insect ...) are little or not transformed for lack of adequate technology or the quantity harvested does not allow it. This study values the knowledge of communities that have consumed insects for centuries by developing small and medium scale edible insect processing technologies. Two main species of wild insects consumed are collected in the wild and preserved by lyophilisation before analysis. The results of micronutrients and macronutrients analysis are compared with those of individuals of the same species reared under controlled conditions. Production (breeding) and processing (from harvesting to slaughtering to long-term preservation) trials were conducted with the effective participation of selected farmers in the Malagasy highlands. Insects were dried and powdered, and the meal thus obtained was incorporated to daily consumed products at different rates (10 %, 15 % and 20 %) to assess the acceptability and preference of the community. The technologies developed and validated by local stakeholders are appropriate to the peasant reality in terms of equipment availability and investment cost. The energy balance was controlled through the use of hybrid solar-wood combustions energy. Results of nutritional values of processed products and their acceptability are presented and discussed. In the medium to long term, the innovative processing technologies presented can have a positive impact on the nutrition of a population with chronic deficiency of protein and oligo-elements and have the potential to become an additional source of income for rural households with little means (landless). The national policy is still to be developed with the actors concerned to further promote the edible insect sector. The results of this study can contribute to this development.

Keywords: Acceptability, insect meal, micronutrients, participative research, processing, protein