seed madagascar

sustainable environment, education & development

A Report for

PROJECT SAKONDRY

Building agricultural capacity to reduce food insecurity through household insect farming in southeast Madagascar: Market research results

May 2022

Overview

Through the establishment of edible insect farming across communities in southeast Madagascar, Project Sakondry aims to increase the affordability, accessibility, and stability of sustainable, nutrient-rich protein sources that will directly improve food security and livelihood opportunities for communities across Anosy.

The most recent project phase (November 2021 – February 2022) built upon knowledge obtained during a short edible insect pilot from early 2021, and targeted five rural communities experiencing high rates of moderate to severe acute malnutrition within the Anosy region: Sainte Luce, Ebakika, Mananara II, Tsagnoriha, and Vatambe. Sainte Luce was the site of the pilot project that introduced the practice of insect farming.

One of the stated outcomes of Project Sakondry was *improved capacity of women to generate household income through the sale of excess insects and beans in the long term*. In order to meet this objective, SEED planned to undertake identification of routes to market, including appetite for purchase of the edible insect *sakondry* within communities and in the wider Fort Dauphin district, determining the potential sale price of *sakondry* and of *antaky,* the edible host plant that *sakondry* live on, and conducting market testing.

To complete this first step, and before being able to delve into appetite for and marketability of *sakondry*, SEED ran a survey to understand the market itself and people's familiarity with *sakondry* as a food source. A key goal of the survey was to understand current customer needs and buying behaviour in rural market hubs in relation to existing protein choices, and where customer needs were not being serviced. Surveys were carried out in an informal manner with passers-by in the market hubs of Mahatalaky, Tsagnoriha, and Vatambe. Survey questions can be found in the Annex.

Further surveys regarding points of sale, sale price, and market testing of *sakondry* were not able to be carried out in the absence of sufficient quantities of *sakondry* produced during the project. With *sakondry* absent from the majority of project beneficiaries' plants, and with *sakondry* occurring in very low numbers (see **Project Sakondry: Monthly monitoring survey results**), it was not possible to tangibly assess key metrics through hypothetical questions alone. However, additional information to inform market knowledge was able to be gleaned from other aspects of Project Sakondry's work. Prices for beans were able to be determined through questions at baseline and endline, monthly monitoring uncovered bean selling practices, and anecdotal evidence helped contextualise and supplement all learning.

This report presents the key findings from the preliminary market survey carried out from December 5th to 18th, 2021, as well as a summary of additional market learnings gained throughout project implementation from November 2021 to 31st March 2022.

Results and Learnings

Preliminary market survey

40 individuals were surveyed in the rural market towns of Mahatalaky (n=19), Tsagnoriha (n=10), and Vatambe (n=11). Participant ages ranged from 18 to 61. 47.5% of participants (n=19) were men, and 52.5% (n=21) were women.

Buying behaviour

Nearly all participants (90%, n=36) were buying food at the market. The majority were either buying food to take home, or were buying both food to take home and snacks to eat eminently. A smaller proportion of people were in the markets to eat lunch. 35% of participants were buying snacks, with an additional 10% stating they would buy snacks if they had enough money.

84% (n=34) of participants were buying protein in some form at the market. The most common protein source mentioned was fish (over 50%), though many people did not specify which protein source they were buying in

particular. Beans were the second most common protein source that was directly mentioned, followed by chicken and zebu.

Many people visited the market daily, stating that it was the best and easiest place to obtain the food that they needed. Participants also cited the fact that fish was widely available at the market as a reason to come, as well as the price of goods being reasonable at the market.

Sakondry familiarity

80% (n=32) of people were familiar with *sakondry* in some way. The wide majority (80%) considered sakondry a snack, and fewer people (27.5%, n=11) saw them as *loaky* (a side, typically a form of protein, eaten alongside a portion of rice as a main meal) in addition to being a snack. No one said they were solely *loaky*. Many people had also eaten *sakondry* as children.

Responses on whether people would buy *sakondry* at the market were mixed, with the majority being uncertain or negative. However, there was some misunderstanding of the question amongst respondents, with the question of whether you *would buy* sakondry answered in the negative because they could not *currently* buy *sakondry*, rather than as a hypothetical once *sakondry* was more widely available in the future. Answers are grouped into approximate categories below, by the best approximation of answers given (Table 1). Four people did not answer this section.

Table 1: Responses from survey participants regarding whether they would buy sakondry *at the market.*

Would you buy *sakondry* at the market?	Number of respondents
Yes	7 (19.4%)
Not yet	16 (44.4%)
Maybe	6 (16.7%)
No	7 (19.4%)

For those that answered *maybe*, a common reason surrounding the uncertainty was the cost of *sakondry,* with many people saying that it would depend on the price. For those that answered *no,* some people cited not enjoying eating insects, while others stated that it was possible to harvest *sakondry* in the wild and therefore unnecessary to buy them. There was also little support for buying *sakondry* outside of the market, such as at a taxi brousse stop. However, for some this final question was also considered a current rather than hypothetical inquiry.

Monthly monitoring

Through monthly monitoring visits, which took place in each community over the course of the project, harvest and selling of both host plant beans and *sakondry* were tracked. No *sakondry* were sold by monitored beneficiaries over the course of the project. One household was able to sell beans from their host plants, with beans selling for between 1,000 and 1,300 MGA per cup. Further details can be found in **Project Sakondry: Monthly monitoring survey results.**

Baseline and anecdotal data

From baseline and endline surveys, the primary form of protein consumed was fish (Figure 1). Further details about protein consumption and purchase can be found in **Project Sakondry: Baseline and endline survey results.**

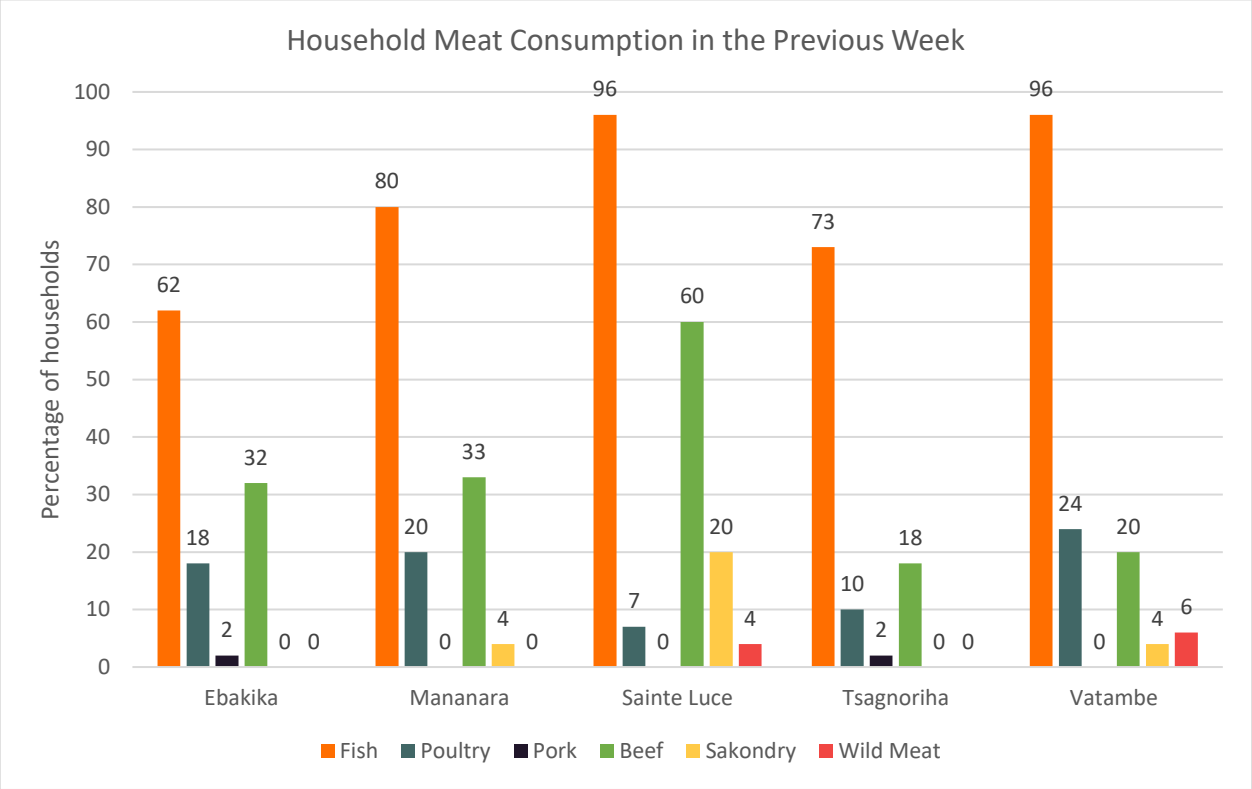

Figure 1: Percentage of households surveyed consuming each protein source in the week prior to the project baseline, by target community.

The typical price ranges of locally-available protein sources were also compiled, both from components of the baseline and endline survey and from anecdotal reports. These prices are listed in Table 2.

Table 2: Prices of typical protein sources purchased by participating households. Information from baseline surveys, endline surveys, and anecdotal reports.

Item	Unit	Price per unit
Small dried fish	Cup	800 – 1,000 MGA
Beans	Cup	1,000 – 1,600 MGA
Crickets	Cup	500 – 1,000 MGA
Fresh fish	Kg	1,500 – 4,000 MGA
Zebu	Kg	5,000 – 10,000 MGA
Poultry	Kg	5,000 – 10,000 MGA
Pork	Kg	7,000 – 10,000 MGA

Additionally, SEED staff purchased *sakondry* twice while working in Sainte Luce for personal consumption. In the first instance, a 1.5L bottle (approximately six cups) of cooked *sakondry* was purchased for 20,000 MGA (approximately 3,333 MGA per cup), and in the second instance, 0.5L (approximately two cups) of uncooked *sakondry* was purchased for 5,000 MGA (approximately 2,500 MGA per cup). In both cases, the price was set by the seller. In both cases, the *sakondry* were not purchased from a project beneficiary's plants, but instead were gathered from naturally-occurring populations in the wild, due to a lack of sufficient *sakondry* on anyone's host plants.

Key lessons

The findings of the market survey helped identify the three markets as hubs for buying food, with many participants surveyed in the market coming with the intention of purchasing some form of protein. While fish was the main protein purchased, multiple other foods were also bought. This does not negate the possibility of other hubs for buying protein existing, but it does help identify these three markets as potential sale locations for *sakondry*.

However, though many people at the market identified *sakondry* as a food source, for the majority, the association was as a snack rather than as *laoky.* Interestingly, when Project Sakondry *beneficiaries* were surveyed at endline, 38% identified *sakondry* as *laoky*, and an additional 33% identified them as both *laoky* and a snack (see **Project Sakondry: Combined baseline and endline survey results**). Project beneficiaries were provided with both training and visual learning aids to help establish an association between sakondry and nutrition, which may have influenced the relatively higher proportion of project beneficiaries identifying *sakondry* as *laoky* as compared to the general public. Targeting messaging may therefore help spread this perception of *sakondry* as a valid and valuable part of a meal. Additionally, with a minority of participants being at the market to buy snacks, and some citing a lack of money as a barrier to buying snacks, *sakondry* might be a less attractive item if viewed purely as a snack item.

This aspect of motivation to buy also arose when asking whether people would buy *sakondry* in the market, when multiple participants stated it would depend on the price. Therefore, assessing willingness to pay will be important when considering routes to market and the target demographic for *sakondry* sales. At the price stated for *sakondry* purchase in Sainte Luce, *sakondry* would be more expensive per cup than dried fish, crickets, and beans; however, it should be noted that prices may have been inflated when selling to foreigners and due to extra effort expended to find *sakondry* in the absence of large colonies.

Overall, while *sakondry* have been shown to serve as viable and nutritious alternatives to traditionally-eaten protein sources (Borgerson et al., 2021), this association is not yet widespread, potentially presenting a barrier to selling *sakondry* widely as a protein alternative. Future project phases should explore avenues to improve familiarity with *sakondry* as a valuable protein source that can be used in meals in addition to as snacks, particularly if *sakondry* is to be sold in market hubs that would not have already been exposed to *sakondry* messaging through SEED-led training.

Conclusion and Next Steps

The market survey results, in conjunction with additional data and information gathered throughout the project, provided Project Sakondry with a better understanding of the market landscape and viability for excess *sakondry* sales. In the absence of harvestable *sakondry* colonies, further market research was not viable, however, key next steps have been identified including the need to gauge willingness to pay and the need to spread messaging regarding *sakondry* as a substitute for other animal protein. Market hubs were identified as potential points of sale, and insight was gained into current purchasing practices, including prices paid for other protein sources.

With *sakondry* cultivation meant to first provide immediate access to nutrition and increased dietary diversity to project beneficiaries, and sale of excess *sakondry* being a secondary function of the project, focus currently remains on investigating avenues to increase *sakondry* colonisation and *antaky* host plant growth and survival. However, the sale of excess *sakondry* remains a promising supplementary income stream, and future phases of Project Sakondry should continue to seek ways to incorporate market research and sales.

Acknowledgements

Special thanks to the Canadian Fund for Local Initiatives, who funded this study, and project partner Dr Cortni Borgerson. Special thanks must also go to the individuals surveyed, and project beneficiaries for their participation in monthly monitoring, baseline surveys, and endline surveys.

Further Reading

SEED Madagascar (2022). A Report for Project Sakondry - Building agricultural capacity to reduce food insecurity through household insect farming in southeast Madagascar: **Baseline and endline survey results**

SEED Madagascar (2022). A Report for Project Sakondry - Building agricultural capacity to reduce food insecurity through household insect farming in southeast Madagascar: **Monthly monitoring survey results**

References

Borgerson, C., Fisher, B. L., Razafindrapaoly, B. N., Rasolofoniaina, B. J. R., Randriamanetsy, J. M., Razafindrapaoly, B. L., Rajaona, D., Herrera, P., Van Itterbeeck, J., Martinez, K. M., & Aardema, M. L. (2021). A nutrient-rich traditional insect for improving food security and reducing biodiversity loss in Madagascar and sub-Saharan Africa. Conservation Science and Practice, 3(9), 1–12. https://doi.org/10.1111/csp2.480

Annex I: Market Survey

Location: Date: Surveyor:

Questions

If you are able, please gather this information:

Male or Female? (please circle one)

What is their approximate age (please circle one): 18-20, 21-30, 31-40, 41-50, 51 and older

1. Do you buy food at this market?
    a. If yes, are you buying snacks to eat now? Or are you buying food to take home? Or both?
2. Do you usually buy protein (chicken, fish, zebu, etc.) when you visit this market?
    a. Why or why not? (Price, don't want it, don't need it, convenience …)
3. Are you familiar with sakondry? What do you know about it?
4. Do you consider sakondry a snack, or laoky? Or neither/ both?
    a. Would you buy sakondry (or other insect proteins) at the market? Why or why not?
    b. Would you buy sakondry if you saw it somewhere else, like at a taxi brousse stop?