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Council for Tropical and Subtropical Agricultural Research

ATSAF - CGIAR++ Junior Scientists Program Final Report

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Start and end date of stay at IARC: 14 Feb 2022 - 21 Jul 2022
Start and end date of remotely supervised project: -
Title: Effect of changes in small farm agrobiodiversity levels on women's and children's diet quality in Vihiga, West Kenya: a participatory approach

After a couple of days to get to know the city and the neighbourhood, I started getting to know the team and joining group presentations. Directly I have understood that coming here would have been an intense beautiful experience. I have been welcomed in the office by Irene Induli and Phd candidate Francis Odour. After sharing information about our projects, I realized that I could learn a lot by discussing with researchers that know Kenya, its culture and socioeconomic reality. The evident cultural, social and economical gap between Europe and Kenya, had been a challenge for understanding the data set while being in Germany. I immediately continued to work on my data that I have been working on since few months back in Germany. Rearranging data on Excel has been my main occupation, due to changes on which variables to analyse. After a couple of weeks, I have received a new dataset that was supposed to be without issues and started the data cleaning process once again. During this process I have been mainly helped by Francis Odour, a Phd student working in the same office as mine. The datasets that I have mainly worked on have been collected within the project "Improving access to and benefits from a wealth of diverse seeds to support on-farm biodiversity for healthy people in resilient landscapes", implemented by Bioversity International and funded by Biovision Foundation Switzerland.

The project implementation ran from 2018 to 2020 in partnership with other local and international organizations. The aim of the project was to promote community-led conservation and use of a wealth of diverse seeds to support on-farm diversity, production of year-round diverse nutritious foods, incomes and dietary quality. From 2018 (baseline) and 2020 (endline) a quasi-randomized controlled study design was employed where communities were classified into intervention and control groups. Around 400 households were surveyed in both stages. The criterion for inclusion was presence of at least one woman aged 15 – 49 years and a child aged between 6-23 months. Ten sub-locations were included in the survey, with five being the intervention groups and another five being the control groups. Two types of standardized questionnaires were used to collect data in each household i.e. the 24-hour dietary intake recall and a household questionnaire. Different enumerators administered each of the questionnaires on different days for every household. Dietary data was collected on two non-consecutive days using the 24-hour food intake recall method. The household questionnaire was used to collect data on five different aspects namely: demographic and socio-economic characteristics, household food security and dietary changes, maternal nutritional knowledge and attitudes, household agricultural practices and farm diversity and household decision-making. Several factors brought difficulties to understand and organize the datasets. Firstly, baseline and endline have been collected one in hard copies and one digitally, bringing variation in the final dataset. The vast amount of data available, different languages involved and multiple errors by the enumerators made data cleaning process and analysis to be laborious.

During the beginning of March, I had a meeting with Dr. Céline Termote and Dr. Irmgard Jordan. From that meeting, a new way to organize data has been decided, and I started to get to know the statistical program SPSS.

I started to work together with Nicanor Odongo the second week of March. Nicanor had to do an internal report with the endline data I was working on. We then learned together how to use SPSS, and started to analyse micro and macronutrients adequacy by using the multiple source method. After some work prepared, a new meeting with Céline and Irmgard occurred. During the meeting we discussed about how to deal with specific cases in the dataset. I kept working on the dataset, together with attending some webinars about qualitative data collection tools.

Afterwards, another meeting with Dr. Céline Termote, Dr. Irmgard Jordan and Lilian Aluso occurred. Lilian, the researcher managing the ongoing projects in Vihiga, brought new insights on how the project had been planned back in 2018 and helped to further comprehend the dataset. Moreover, she gave an overview on how the project kept evolving over time.

At the end of March, I had the first results regarding micro and macronutrient availability, dietary diversity score and food groups consumed. Consumption of dark leafy greens (DLG) and first insights on biodiversity on farm. All these divided into baseline and endline, comparison, direct and indirect beneficiaries.
Results looked similar to what it has been done back in Germany therefore regarding the dataset it was still unclear if it is reliable or not.
Regarding species count, since the baseline survey was manually and endline digitally, differences might have been occurred due to the sampling method. No clear explanation for the species decline has been found at that point.

During the first week of April, I have been on holyday on the coast, unfortunately after 4 days I got ill, and this has been affecting my work for 15 days. A trip to Vihiga County, where the study was taking place, was planned. The idea was to live hosted by a farmer from one of the intervention communities for a week starting from the 10th, but my conditions did not allow it. I felt slightly better after almost 2 weeks and got back to the office the 18th. Unfortunately, fever came back until the 23rd. During this time, I have worked on descriptive statistics for socioeconomic characteristics, that still need to be concluded. The aim was to present all the work for my German supervisor, Dr. Gudrun Kedung, arrival.

After the meeting, a new way of organizing the results and which results to keep has been decided. At this point the final data analysis for baseline and endline data started. Together with the help of Dr. Johanness Herrmann, I have been working on SPSS to decide which statistical tests to use for descriptive and explorative statistic. Together with Dr. Irmgard Johrdan, I have been working on a different classification of the households for the Wealth Index.

During May, I have been working together with Casey Tokeshi, an intern who has done Focus Group Discussions (FGD) in Vihiga, in order to plan my field work.

After a last meeting with Dr. Johannes Herrmann, I have worked a bit more to finalize the data analysis. During the 2nd week I kept learning about FGDs, making a first draft and worked more on the baseline-endline results. Since I had never worked with qualitative data before, I have spent time learning about the topic with the focus on FGDs.

Unfortunately, from the 19th I had my last health issue that caused around 10 days delay for the FGDs to take place.

The results from baseline and endline brought several questions for my thesis. Therefore, it has been decided to make FGDs in the communities. Moreover, I have been asked to present my findings to the different communities, since they have never been informed about the studies that are done about their communities.

During June I have finalized all the bureaucracy for the FGDs I left for Vihiga county. Three were the main objectives:

1)   To report the results of the integrated community-based project *"Improving access to and benefits from a wealth of diverse seeds to support on-farm biodiversity for healthy people in resilient landscapes"* to the intervention communities.

2)   To understand people's perceptions of their diet and crop diversity on farm.

3)   To understand to which extent external factors influenced the project outcomes.

Research questions

1)   How has the project influenced land size and value for different crops? *(Farmers claimed that now the share of vegetables on the farm increased and maize decreased. This would not be reflected in the species count)*

2)   How has the project influenced proportion of DLG in their meals? *(Farmers claim that now they eat a higher amount of greens compared to for instance Ugali. This is not reflected in the DDS, but in the Vitamins and micronutrients)*

3)   How has COVID-19 affected farmers crop production and their diet? (*Farmers claim that because of covid markets were closed, some people ended up with a surplus and gave the DLG to livestock. Others mentioned that since everyone is producing them, there is no market anymore, economic value declined)*

4)   To which extend did environmental factors (drought/hailstorms) affect farmers crop production?

5)   Are there other events that affected your farm activities or diet? Like other NGO's projects, political changes or changes in the agricultural sector?

Data collection for the FGDs was carried out between 24th to 29th of June 2022 by four trained enumerators that worked in teams, one being the facilitator and one the notetaker. A different guideline for control and intervention, and a different guideline for women and men groups was preparred.

Additionally, the focus groups have been recorded and a transcriber been hired.

After the FGDs, I could have gone back to Nairobi, but I felt that staying in the community would have been a much more enriching experience. There I had the opportunity to talk directly to the farmers, explore different villages and compare the intervention to the control communities. Seeing how the different crops did look like on the field, tasting the foods, and generally talk with the farmers, has been incredibly helpful to understand the community as a whole, and not just data on a laptop. Experiencing also different environmental conditions like couple of weeks of harsh sun followed by intense rains, made it evident how much the communities relay on the climate but at the same time they can suffer huge losses just by one single extreme event.

To sum up the results from the FGDS, both 2018 and 2020 have been harsh years for these communities, with several negative events interchanging and overlapping. 2018 had a higher frequency of environmental events (drought, hailstorms, pests) that negatively impacted the farm activities and diet. Nevertheless, not all the factors have the same weight on the communities. The pandemic and its consequent lockdown have been reported to affect not only their farm and diet, but it has modified the whole socio-economic environment. Moreover, all the factors but Covid-19 are to be considered partially individual to each community since the distance between one another allows possible different weather patterns. Covid-19, on the other hand has been a transversal exceptional event. No evident differences between control and intervention have been identified.

Regarding nutrition and farming knowledge, after the project farmers feel more comfortable with their farming skills and nutrition. While before they were eating only maize, now they are trying to diversify their source of

carbohydrates and vary the species of dark leafy greens (DLG) consumed. Moreover, most of the participants claimed that they are consuming more fruits after their meals. If before the project they were selling most of their avocadoes, after nutrition education they are consuming them.

Meat consumption has been reduced for two reasons. First, the higher prices, but several participants claim that now they have reduced the meat ratios because of nutritional knowledge and increased the one of DLG.

Reasons for no changes in DDS between baseline end endline, have been attributed mainly to the impact of Covid-19 with its consequences on lower input availability, inability of purchasing variety of foods at the market and more people to feed in the household. Other reasons were trainings not been taken seriously and gender inequality. The men, as being the HH heads, would decline their female counterparts' proposal on change of diets in their families.

Regarding the decline in number of crop species cultivated farmers gave some unexpected opinions. "In 2018 we were planting so many things on the same land, but after training we decided to reduce the number of species and plant only the once that can help our nutrition" mentioned a farmer.

Another reason was the higher number of people to feed. Some HH ended up harvesting the crops before fully grown to ensure food on their plates, therefore reducing the number of crop species on their farms before the endline survey being conducted.

Other reasons mentioned were army worms, birds, too much rain and hailstorms affecting their crops in 2020. Neighbors stealing crops due to the exceptional corona pandemic has been reported a few times.

Participants opinion on increase in number of DLGs, is that they have chosen to plant DLGs where usually they would have planted other crops, thus lowering the overall number of crops.
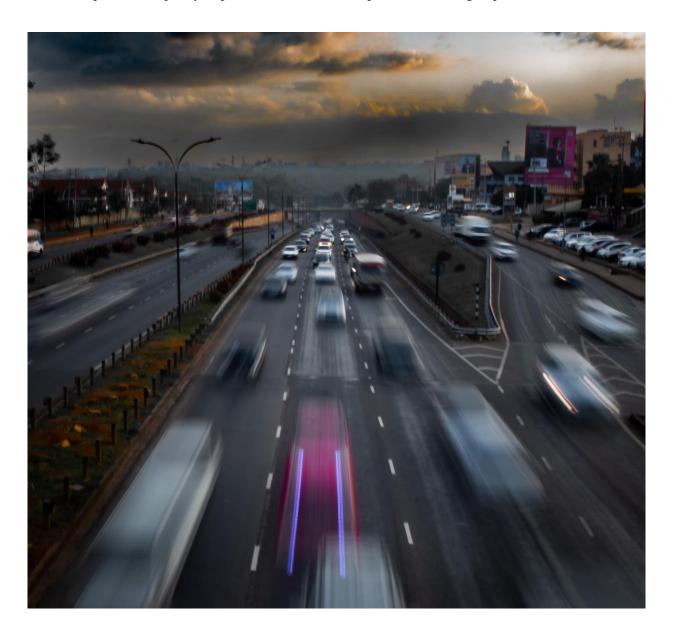
After spending almost one month in Vihiga, I felt that my experience in Kenya was coming to an end. The time passed there has been hard but beautiful at the same time. Definitively an enriching experience at the professional and personal level. The community accepted me, and I never felt so connected with Kenya's culture and nature. I decided to go back to Italy 3 weeks in advance for the following reasons. I had completed all my tasks and most of the people at the office were on holyday or doing home office. I have been suggested not to leave the house for the two weeks prior my flight due to the dangerous presidential election riots. I would have had to pay a full extra month in my apartment for just 20 days, therefore wasting money. Generally I felt that going back home would have benefitted my studying and mental health after such a long stay in quite harsh conditions.

Here I leave some pictures I took during the stay. All the pics are from the studied communities, apart from the first, which is Ticka Road, the highway I had to cross to go to the office daily.
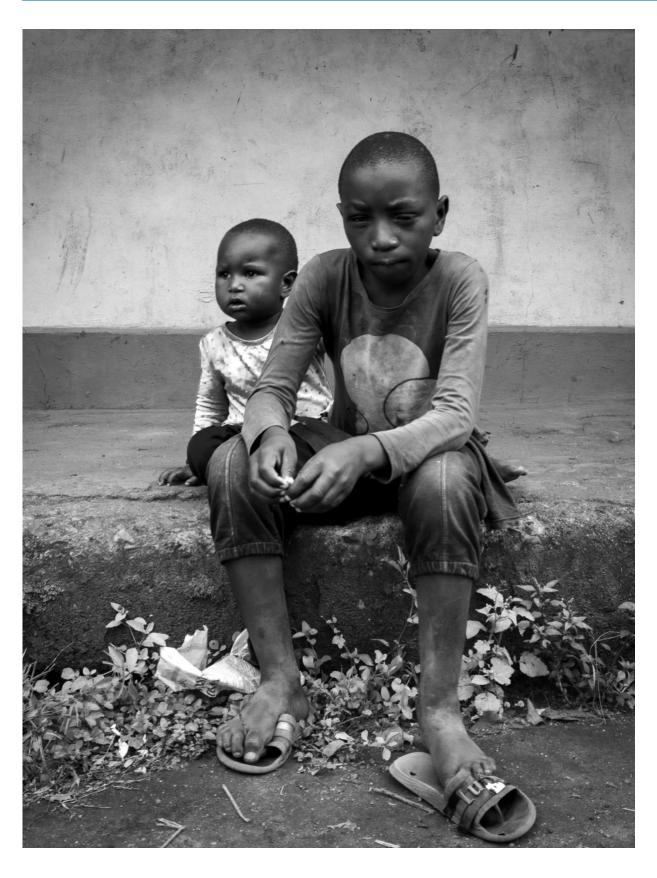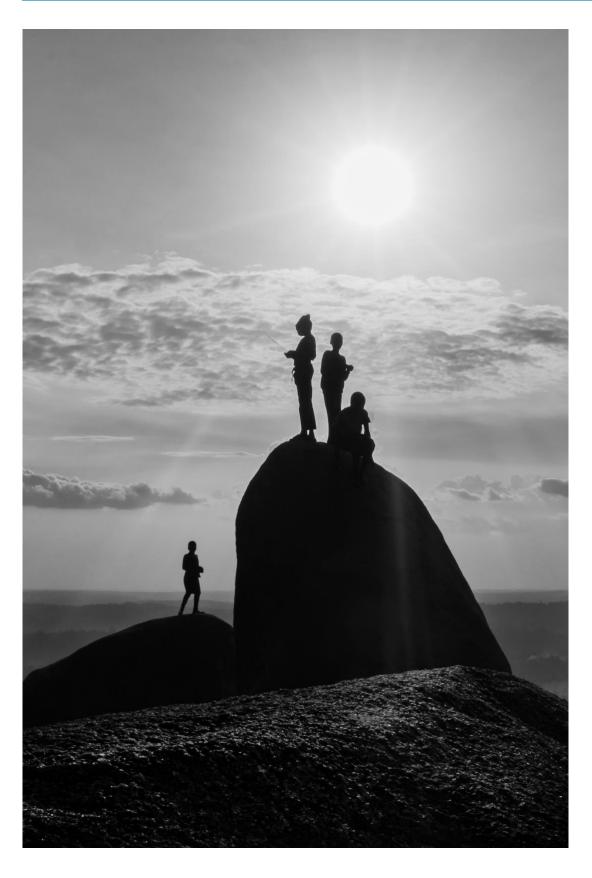
PS: In the future I would like to propose myself as a scientist/photoreporter to promote rural development and nature conservation projects around the world. These are just some of the pics I took. If you would like to have more examples, I have plenty of pictures of the farms, cro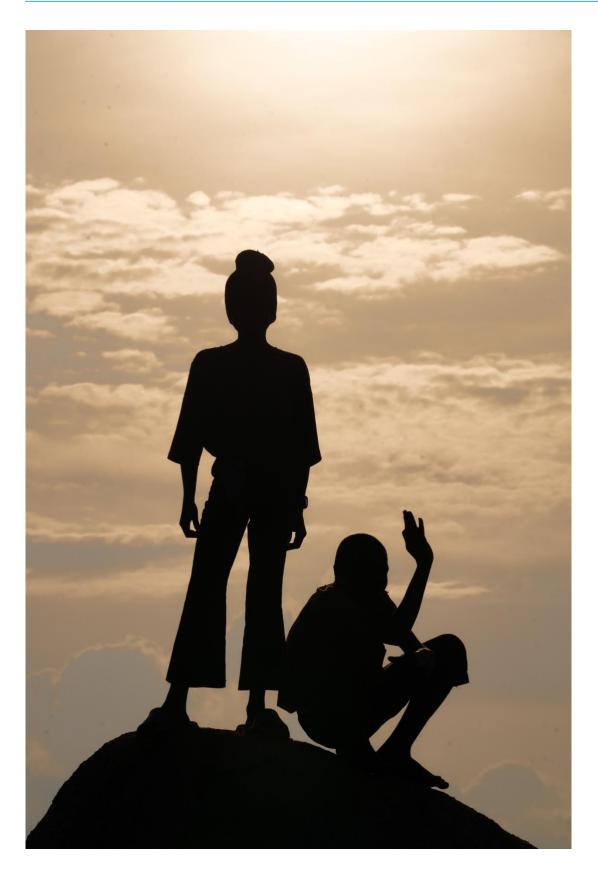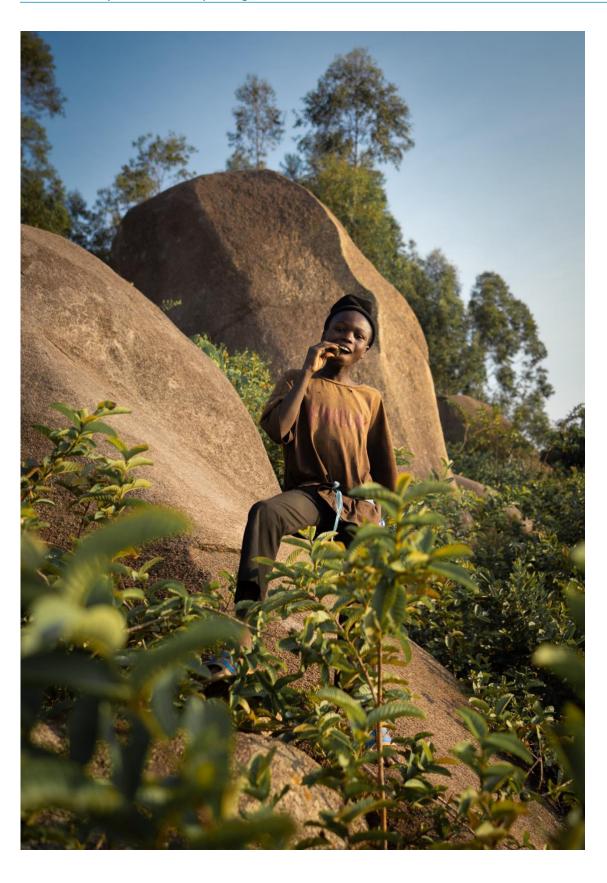ps and the focus group discussion.