

Travel Report

Cristian Moreno García – 16.01.2023-23.01.2023
– 16.02.2023

INDONESIA
GERMANY

Recap

I met with Kajo Stelter and Tabea Komáromi in Jakarta (Java). We traveled together to Palangka Raya (Borneo) where we visited the BIT Headquarters and the recently established genebank. We traveled to Central Kalimantan and stayed 3 nights at the BIT seedhouse. While visiting the three multiplication plots of rice, corn, eggplant and cowpea in different villages, we met the corresponding farmer groups. Finally, we came back to Palangka Raya and head off to Java.

Actions Taken

- Audited the BIT genebank in Palangka Raya
- Gave a workshop for BIT genebank staff (PDF attached)
- Audited the BIT seedhouse in Tumbang Samui village.
- Visited the multiplication plot for rice owned by Bapak Dewi in Tumbang Samui village.
- Visited the multiplication plot for corn, eggplant and cowpea owned by Geterson in Tumbang Oroi village.
- Visited the multiplication plot managed by the farmers' group Tukau Permain in Luwuk Tuwau village, where unfortunately most crops failed.
- Visited the Crop Trust in Bonn.

Observations & Results

- The BIT genebank has been equipped: freezer for long-term conservation (-22°C), portable seed hydrometer, precision scales, shelves, vacuum sealer, germination test tools.
- They acquired a portable oven to dry seeds, which did not work properly, therefore seeds are dried at the village using a greenhouse.
- There is a part-time paid (but full time dedicated) new staff for the genebank.
- Dried, freshly multiplied accessions were treated with insecticide-fungicide, vacuum sealed, placed in long-term storage and made ready for shipping.
- Three staff attended the genebank workshop. We identified the need for generating a VIEWS genebank code.
- Insect activity was seen in a bottled accession stored in the seedhouse.
- Rice accessions planted in the multiplication plot were individually labeled and separated from each other. Accessions were planted in a line and in a circle, those in circle seems to be in better state and with better plant survival. Differences among accessions were evident.
- A pest affecting the rice field near the multiplication plot was observed.
- The leaves tips of rice accessions were yellow, dried and dead showing possible symptoms of a fungi disease. Alternatively, this could also be the effect of the very dry rainy season experienced. However, the farmer identified a set of accessions without such symptoms.
- Corn and cowpea accessions planted in the multiplication plot may have not been sufficiently isolated.

- Corn accessions collected from another region (12hs away), grew up too tall and may no flower.
- Most accessions planted in Luwuk Tuwau village failed and we could not see any accession standing at the time of visiting.
- Local paddy rice accessions and tomato accessions were present in visited sites, however, not yet included in the genebank.
- Visited the traditional Dayak kalekas (a.k.a., perennial forest garden), observed rubber tree harvest along forest tracks, several native fruit trees, food herbs, etc.
- BIT is liaising with the Indonesian national genebank to send a copy of the collection and thus get permission for shipment to Svalbard.
- The Crop Trust (Beri Bonglim) recommended to ensure long-term storage of the collection to be backed up at the Indonesian national genebank.
- The Crop Trust (Beri Bonglim) recommended to include Cristian's and Kajo's insights into the BIT progress report.
- The Crop Trust (Luigi Guarino) provide contacts for possible long-term funding for the management of BIT genebank.

Suggest Next Steps

The functioning of the BIT genebank in Palangka Raya looks very promising and I encourage them to keep working as until now. It is crucial to treat the seeds before packing to prevent pests as the observed in a bottled accession stored in the seedhouse. Since the drier oven did not work, they will need to tune up the drying system in the village and seek for alternatives. I suggested to contact the University in Palangka Raya to borrow an alternative.

Based on the pest observed in the rice multiplication plot, I suggested to identify the species and develop urgently a treatment (attached email from 04.02.2023), it seems to be the whitebacked planthopper *Sogatella fucifera*, which can cause devastating problems. I also recommended to use the circle disposition for planting accessions (instead of the in-line planting) as the accessions in circle looked much better and had more plants alive.

I recommended to take note of those accessions identified by the farmer showing better crop performance and/or, tolerance to diseases and drought and include this information in their database. Ideally, they should take pictures. A few rice accessions had maize-look and they need to carry out a botanical species identification.

To avoid cross-pollination of corn accessions in Tumbang Oroï village, they should consider planting individual accessions apart from each other within the rice field in Tumbang Samui village. For this, no other corn plants should be present. I also recommended to double check the number of individual plants per accession needed for multiplication and using the circle planting design instead of the in-line design. For eggplant and cowpea, nets are needed before flowering to avoid cross-pollination.

For the multiplication plot in Luwuk Tuwau village it is crucial to identify the limitations occurred in the past planting season and find ways to support the group of farmers to ensure a successful harvest. This may include setting up an irrigation system according to the available resources and knowledge in the villages. Alternatively, accessions that failed may be planted in the other multiplication sites.

For those corn accessions collected in another region they may need to evaluate the success of multiplication and if needed, plan to repeat their planting in a more adequate location to ensure growing and harvest.

For future projects, it is encouraged to estimate the number of accessions of paddy rice and tomato that might be available in the villages.

I suggest to include a comprehensive description of the Dayak agricultural system in the report, which involves the traditional kalekas with perennial fruit crops and trees, the slash-and-burn rotational areas with annual crops and the many native plants that are used by the Dayak people. Only in this way, it is possible to understand the sustainable agricultural system practiced by the Dayak people for hundreds of years.

Following the recommendations of the Crop Trust, I suggest to hold on the shipment of accessions to the Indonesian genebank until it is ensured that they can store a safety duplication of the collection in long-term conditions. I also recommend to send the copy as a black box. Furthermore, BIT needs to identify what are the needs of the Indonesian genebank (e.g., a freezer) and communicate this to the Crop Trust to seek possible funding for its acquisition.

Engage with Weltweit members to receive their insights and comments into the annual progress report to the Crop Trust.

Photo Documentation



Arriving on the afternoon of the 17th Standy (second left) picked up his WELTWEIT colleagues Cristian (left), Tabea (right), Kajo (second right) from Palangkaraya airport and treated them with food.



The next morning we visited the office of the Borneo Institute where we were introduced to its activities by its director and its mission by its patron and advisor Kusni Sulang



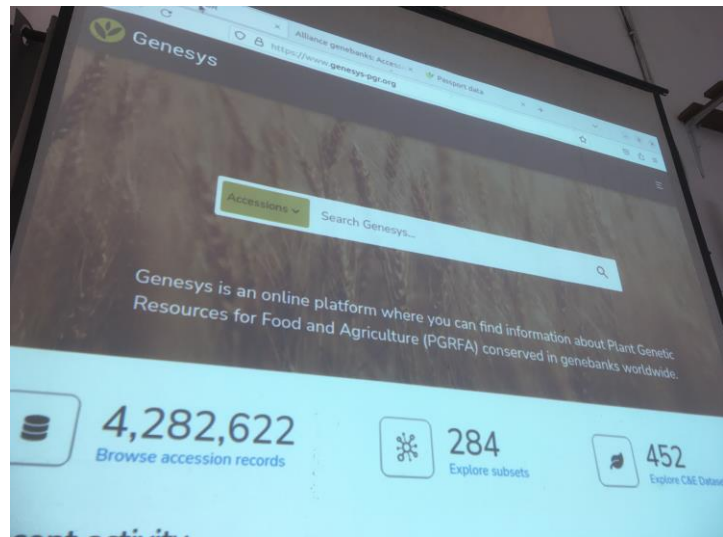
The director Yanedi Jagau showed us the laboratory space the BIT rented across the street from the main office.



The facilities to treat, weight, package and store the accessions collected in the villages are located here.



In the afternoon Cristian gave a lecture on gene bank management.



He explained about the tremendous opportunity for the BIT to become eventually registered as the first Indonesian gene bank in the international database for genetic resources.



After work the BIT team took the WELTWEIT team to see the peat soil and wetland areas ...



... and a sanctuary for the Orangs where they get prepared to be released back to the wilderness.



The next day a five hour car ride brought us to Tumbang Samui village where the seedhouse has been built in 2021 with the support of the Ursula Merz foundation (Berlin).



The seedhouse is community owned and built on the premises of the elected head of village Yanto.



The seedhouse gave us shelter for the following three days as the villagers store their seeds there only until the next cropping season.



All seeds had been replanted and only the accessions for the Crop Trust shared the room with us.



In wise foresight and expecting foreign friends in the future the BIT included a western toilet in their seedhouse – the only one for miles in this part of Kalimantan.



Visiting the first farmer we inspected the multiplication plot of ca. 80 rice varieties within his 1 hectare of rice field.



The farmer Bapak Dewi and his wife cultivate rice, maize, cassava, eggplants and other annual crops in the traditional slash&burn system. They own ca. 10 ha of cropping land but each year only one hectare is cleared from vegetation ("slashed"), then burned to clear the soil from weeds and produce fertilizer (the ash and coal), and then cropped while the other 9 ha lay fallow and rejuvenate with secondary vegetation.



The farmer is struggling with fungal diseases that may be due to a prolonged dry season.



Stands planted in bundles seem to cope better with the disease.



One variety looked from the leaves more than maize but was of a local sticky rice variety.



Another multiplication plot managed by the farmer Geterson struggled with aphids. The Dayak traditional agriculture prohibits the use of chemical pesticide which poses a challenge to the objective of multiplication for the Crop Trust but has to be respected.



A young secondary forest mainly grown with bamboo ...



...leads from the Dewi to the Geterson farm.



Both neighbours cropping land is separated by a creek where banana and fruit trees grow.



The farmers group we visited on the Geterson farmland constructed an improvised picnic area to greet and discuss with us.



The Getersons had abandoned farming for three years but the prospect to be included in the Crop Trust and Seedhouse project motivated them to resume traditional cropping of rice and other staple crops on their land.



We exchanged expectations



... and learned about challenges.



Stories and facts are rather sung than told in the Dayak tradition.



And gatherings like this always involve the most delicious food with a natural desert of medicinal herbs from the forest.



Back at the seedhouse project introduction and



....discussions continued with the women farming groups. Practical questions were raised towards us like how to deal with the pests in the rice fields.



The next day we visited the forest.
The rainforest is an integral part of the traditional farming system of the Dayak.



Staple crops are grown on fields under shifting cultivation (slash&burn) while the undisturbed forest provides the families with additional food like...



... rattan that is not very nutritious ...



...but tastes good. Or wild fruits that....



...that are rich in vitamins.



Wild red pineapple and yellow pineapple propagate naturally





Bamboo shoots are collected and ...



... latex from rubber trees is harvested.



The rubber trees that were planted a long time ago and are dispersed widely in the forest are an income source for the Dayak families, although the prices for latex have decreased and its profitability is much below that of palm oil. But rubber trees are part of the forest eco-farming system that is characterized by its multiple layers whereas the oil palm is difficult if not impossible to integrate in the traditional system.



Chief Yanto showed us trees that are traditionally used for timber because its wood doesn't decay under the tropical humidity ("[Iron Wood](#)") and those whose resin is used as a medicine.



We came across a water intake that was intact and provides the village with fresh water, though the scheme that is maintained by the district government is hardly sufficient in the drier seasons.



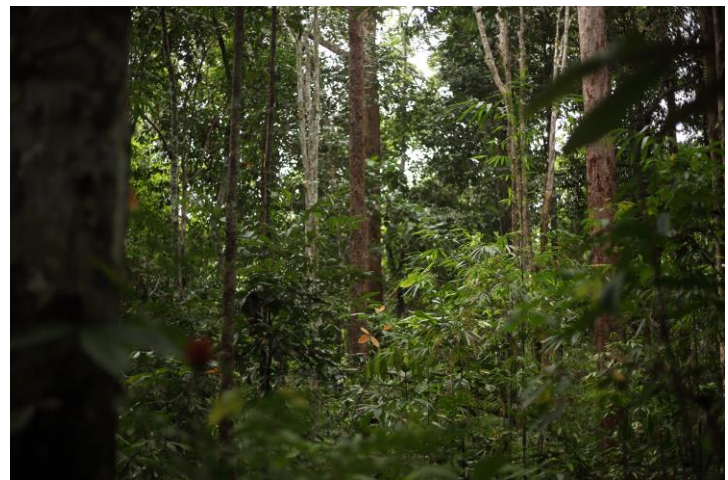
And we came across an illegal gold mining camp.



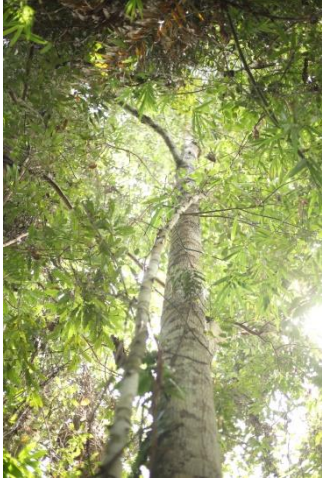
Apart from the commercial oilpalm plantations the illegal gold mines, some of them protected if not owned by government officials, pose the biggest threat to the rain forest. Through their activities they divert rivers and poison the soil with chemicals.



Inside the forest, every now and then left or right on the trail Yanto led us, we passed a "Kaleka". The Kalekas are ancient forest gardens and are another integral part not only of the traditional farming system but of the cultural life in the Dayak society.



Each family owns a Kaleka. Some of them are 200 hundred years old. They were started by someone planting fruit trees and hardwood on the farmland. As a consequence this plot of land would not be cleared and burned anymore and the vegetation would be left undisturbed. The following generations would all benefit from the fruit trees that their forefathers had planted.



Durian trees, ironwood and other valuable trees can grow for centuries and bear fruits in the Kalekas. They are multi-layers eatable forests and hotspots of biodiversity of perennial crops and natural flora & fauna alike because these gardens are cared for and at the same time left undisturbed.

We would not have noticed that we passed a Kaleka because apart from some massive trees in these forest plots they wouldn't look different to our untrained eyes than others. But Yanto knew the Kalekas all by name and pointed them out every time we passed one.



Jagau, the director of BIT, explained us that the Kalekas are holy to the Dayak community because a) their ancestors' spirits dwell in these and b) the products derived from those ancient forest gardens contribute substantially to the families wellbeing. The Kalekas are passed on to the each families' children whereas each child inherits one Kaleka. The Kalekas cannot be divided, which means parents may need to plant new Kalekas, depending on the number of children they have. The Kaleka is also like a status symbol, it represents the wealth of a family, and a young man in the traditional society will not find any Dayak women to marry him if he doesn't own a Kaleka!



Having visited the holy Kalekas we were also taken to other places deep in the forest....



... that are holy for the Dayak and where shamanistic rituals are regularly held.



Before leaving the forest, Yanto would suddenly cut a liana. By then we called Yanto already Papa Carlos which is how others in the village would call him. Carlos is the name of his first child and it is the custom in the Dayak communities that as soon as the first child is born the parents are named after him or her and not the other way around.



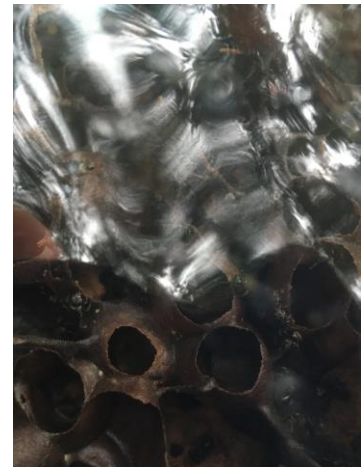
Extending his parental love to his foreign guests Papa Carlos quenched our thirst after seven hours hiking through the rain forest the way the Dayak farmers are doing it.



The last day in the field we visited the women farming groups of the villages Tukau Permain and Luwuk Tuwau.



The women farmers showed us the third integral part of the Dayak farming system: the homestead. Close to the house where each family resides, they practice aquaculture, apiculture with wild, stingless bees....





....grow dragon fruits....



....and vegetables like egg plants.

The multiplication plot established on one of the farmers homestead unfortunately failed – despite the favourable circumstance to be established close to the house and therefore easily be cared for. When preparing the land for the plot, the BIT staff did it without the prior burning of the land – much to the opposition of the farmer – because they wanted to follow the government's advice and prepare it only by weeding and partial ploughing. It may be this (so the farmers believe) or another external reason that may have caused the crop failure.



It was a pity because these women farmers are among the most dedicated partners to the project.



Our last day ended as our visit began: with traditional dancing!

