



Transformative Agriculture and Enterprise Development Program

# TADEP+ Update

May + June 2020

## Key program activities

### The final countdown

With less than 18 months of TADEP remaining, planning is underway for the final activities, reporting, end of program evaluations and the program showcase. Whilst COVID-19 has stymied travel plans for individual projects and meant that the 2020 TADEP Annual Meeting was cancelled, it is hoped that the restrictions will ease with time and enable face-to-face interactions before the conclusion of the program, most especially for the Showcase which is currently scheduled for September 2021.

### COVID-19 impacts

Each month, the three remaining TADEP projects have been providing updates about the impact of COVID-19 on project activities and whether there are any budgetary or timeline variations to be considered. This information is collated and provided to ACIAR and DFAT. The TADEP team has been working closely with the ACIAR PNG Country Office to provide additional details relating to COVID-19 impacts and responsiveness.

### TADEP+ Collaborative Research Grant

The remaining Collaborative Research Grant (CRG) between the Bougainville Cocoa and Family Farm Teams projects, entitled 'Initiating vegetable cultivation to improve nutrition in Bougainville', has been extended by six months due to COVID-19 and has recently submitted a brief mid-term report.

The CRG project is piloting an intervention aimed at improving the diets of people living in 10 villages (South, Central and North Bougainville) identified from the Bougainville Cocoa 'Livelihood Survey' results that have a

- Building capacity for Government staff in nutrition, safe water and gardening cultivation
- Providing nutrition and gardening education to the selected villages
- Delivering Family Farm Team (FFT) workshops to the selected villages

**Click here** to read the CRG mid-term report.

## ACIAR Partners magazine

The latest edition of ACIAR's *Partners in Research for Development* magazine is now available for download. **Click here** to read the 2020 Issue 2.

## Meryl Williams Fellowship

Funded by the ACIAR, the prestigious Meryl Williams Fellowship provides an immersive leadership program, mentoring and professional development opportunities, designed to enhance leadership skills, opportunities and pathways for women in the agricultural research and development sector. The next round of applications closes on 31 July. Eligible candidates from Nepal are encouraged to apply. More information can be found **here**.

## Key project activities



### Bougainville Cocoa

Project activities have recently recommenced after key project staff were stranded in Port Moresby and Arawa for more than a month.

Whilst the 2020 Bougainville Chocolate Festival has been cancelled, a series of smaller regional field days will be hosted by DPI.

The women's group at Kubu Station responded very well in supplying vegetables to Buka Town residents during and after COVID-19 lockdown, including the State of Emergency period utilising knowledge and skills learnt of compost production and vegetable nursery production.

**Click here** for the full Bougainville Cocoa project update

A visit to a CMFT cocoa block and solar drier in development in East New Britain with the Cocoa Board REDS team and project team was a great team-building activity post-COVID-19 and reinforced the importance of further work to develop planting of seedlings as well as clones.

Cartons of the new 'Pacific Islands Cocoa Book' have been distributed through East Sepik and copies of the 'Cocoa Farmer Handbook' have been given to participants during training workshops in New Ireland.

A survey form to assess the success of Cocoa Model Farmer-Trainers and farmers groups was developed with the help of George Curry and Gina Koczberski at Curtin University.



[Click here](#) for the full PNG Cocoa project update



## Sweetpotato

A demonstration irrigation system has been established at one of the participating farmer sites in Asaro. Many of the crop management changes being used in the demonstration trial were picked up by the farmer on the project supported study tour to Australia in 2019.

Trials evaluating the performance of '*klin kaukau*' (clean sweetpotato) in comparison to traditional planting material have been completed at sites in WHP, Jiwaka and EHP.

Farmers have managed to maintain clean kaukau vine sales and distribution despite the COVID-19 travel restrictions. Notably, Niugini Fresh Limited (a subsidiary of the Kaia Works Road Construction company based in Chimbu) purchased over 2,000 vines to generate clean planting material to distribute to the 250 contract growers that supply the company with produce to market in Port Moresby.

[Click here](#) for the full Sweetpotato project update

The Transformative Agriculture and Enterprise Development Program (TADEP) is a multidisciplinary research program that aims to improve the livelihoods of rural men and women in Papua New Guinea. The program initially had five component projects, of which two have concluded. The program now comprises of the following:

- **Bougainville Cocoa** - HORT/2014/094 Developing the Cocoa value chain in Bougainville
- **PNG Cocoa** - HORT/2014/096 Enterprise-driven transformation of family Cocoa production in East Sepik, Madang, New Ireland and Chimbu Provinces of Papua New Guinea
- **Sweetpotato** - HORT/2014/097 Supporting commercial Sweetpotato production and marketing in the Papua New Guinea highlands



Australian Government  
Australian Centre for  
International Agricultural Research



Whilst two of the initial five TADep projects have concluded, they have evolved into three new ACIAR projects and both have keenly agreed to continue to contribute to TADep. The following updates demonstrate this continued collaboration across research disciplines, sharing useful and relevant insights.

## Family Farm Teams

A project manual for use by smallholder families in Timor-Leste has been developed, building upon the Family Farm Teams methodology developed in Papua New Guinea. This work is part of TOMAK (*To'os ba Moris Di'ak*, or Farming for Prosperity) which is a 5-10 year agricultural livelihoods program funded by the Australian Government in Timor-Leste.

[Click here](#) for the 'Family Decisions: How farming families can work together as a team' facilitation manual.



## Galip Nut

The Galip Nut team submitted their final report and the highlights included;

- A demonstration factory was established at NARI producing over 2.4 tonnes of processed products in the final year of operation. Technical research underpinning this included depulping, drying cracking roasting, nut quality, food safety, shelf life and nutritional analysis.
- A range of products were developed, and markets tested in East New Britain and Port Moresby. The prices for final product ranged from PGK140/kg - PGK170/kg. The sales trials delivered consumer sales for retailers exceeding PGK450,000.
- A range of training interventions were delivered for smallholders, small-scale entrepreneurs and SMEs, with an emphasis on female smallholders and micro-enterprises.

[Click here](#) for an overview of the Galip Nut final report.



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**COVID-19**

- The State of Emergency (SoE) in Bougainville prevented travel and field activities for several weeks, but was lifted in mid-June. Josie Saul-Maora and Robert Taula returned to Rabaul after being stranded in Arawa from 17 March - 25 April when the SoE was imposed while they were conducting Family Farm Teams (FFT) training. James Butubu returned to Buka after being stranded for several weeks in Port Moresby (23 March to mid-May). While there, James met ACIAR and DFAT staff at the Australian High Commission.
- Project activities have recently recommenced.

**Upcoming or recent activities**

- Grant Vinning worked with James Butubu during his involuntary quarantining in Port Moresby to develop lessons learned of the physical aspects of fresh fruit and vegetable markets in Port Moresby that can be applied on Bougainville.
- David Guest, Merrilyn Walton and James Butubu, along with other cocoa researchers, provided feedback over several weeks of online discussions to ACIAR about research priorities for cocoa in the Pacific. We were advised that our feedback would be used to formulate a concept note for a new PNG Cocoa project, but hope the information will also be used to develop a broader approach to ACIAR's investments.
- Discussions have been held with Paul Bedggood from Bougainville Partners about the 2020 Chocolate Festival, which has to be cancelled due to the pandemic. We plan to run a series of regional field days, coordinated by DPI, later in 2020 instead of the Festival. The 2021 Festival will go ahead as a DPI event.
- Discussions were held with Damien Field and Kanika Singh from the ACIAR Cocoa Soils project about future collaborations, including the development of a diagnostic app for cocoa, food crops, livestock, human and soil health. We also discussed the development and implementation of a school cocoa curriculum, perhaps in collaboration with Business for Development [www.businessfordevelopment.org](http://www.businessfordevelopment.org) an Australian NGO with similar experience in East Timor.
- Training on cocoa pod husk compost production and vegetable production was conducted in a Village Extension Worker (VEW) site in Novah 2 Ward.
- Training on cocoa pod husk compost production was conducted in Hahon (Ben Mate) VEW Edward Gaurom's place. More farmers turned up at the training site and requested 10,000 poly bags and training on grafting techniques and general management.
- Data collected on 90% and 50% canopy removal rehabilitation technique on 25-year-old clones. A report was written and uploaded on the Bougainville Reader website.
- Training on vegetable and farm diversification was conducted in Mamaro.
- An evaluation was conducted in Buin DPI budwood and assessment ex situ was conducted to assess precocious attributes, response of (integrated pest and disease management) IPDM inputs and yield components was initiated at Buin DPI Budwood and IPDM block.
- The women's group at Kubu Station responded very well in supplying vegetables to Buka Town residents during and after COVID-19 lockdown, including the State of Emergency period utilising knowledge and skills learnt of compost production and vegetable nursery production (Figures 1 and 2 below). Optional marketing opportunities to supply other towns such as Port Moresby is initiated with eDidiman [www.facebook.com/The-EDidiman-Initiative](https://www.facebook.com/The-EDidiman-Initiative) marketing and container shipment to Port Moresby.
- Large quantity (over 100kg) of dry beans has been processed into chocolates. We are collecting data on optimal processing time (grinding/conching-tempering), optimal bean roasting time, percentage (%) moisture control, wastage monitoring, observation & monitoring on local demand and marketing.
- UNRE has appointed Konstatina Kanugere (South), Jude Murawa (Central) and Bradley Nelson (North) as Extension Officers to join our team. Their role is to develop the food crops and livestock diversification components of our project.



**Figure 1:** Harvest and sales of vegetables in Kubu.



**Figure 2:** Vegetable growing with application of compost and goat manure.

- A TADEP Steering Committee meeting was held online in April, mainly to discuss mitigating the impacts of COVID-19 on project activities, but also to discuss the evaluation and the September 2021 showcase event planned for TADEP.
- The next visit by the Australian project team is planned for February 2021. During that visit our priorities will be to:
  - Plan and prepare for the End of Project review due in mid-2021.
  - Conduct follow-up surveys of cocoa farmers. This will involve the selection and training of interviewers to administer a shorter endline farmer survey. This survey will comprise the same set of questions as the baseline survey plus additional questions about training and wet bean sales in a sub-sample of five Village Assemblies (VAs) from each region, including 10 will be randomly selected households (150 households).
  - A survey will also be administered to all the VEWs to identify factors contributing to the success of their activities to encourage changes in farmer practice and the sustainability of their activities. This survey will incorporate questions developed by the PNG Cocoa team to enable comparisons across the projects.
  - The University of Sydney has provided ethical approval for the additional surveys. Ethical approval will also be obtained for the DPI of the AROB.
  - VEW training in each region. Training will include information on water and sanitation (pit toilets) and nutrition/vegetable gardens. The training will be delivered providing the underpinning knowledge and theory as well as demonstrating how to provide the information to farming households and villages.

#### **Progress summary of relevant Collaborative Research Grant**

- Activities have been on hold due to the State of Emergency.
- Since the lockdown was lifted in mid-June, the Northern Hub conducted visits on 23 and 24 June, while Central is scheduled for first week of July.
- The second round of Family Farm Teams training in South and Central villages is proposed to start 20 July.

#### **Research tools, articles, resources**

- Two research papers have been published in the journal *One Health*;
  - Walton, M., Hall, J., Van Ogtrop, F., Guest, D., Black, K., Beardsley, J., ... & Hill-Cawthorne, G. (2020). The extent to which the domestic conditions of cocoa farmers in Bougainville impede livelihoods. *One Health*, 100142. [www.sciencedirect.com/science/article/pii/S2352771420300409](https://www.sciencedirect.com/science/article/pii/S2352771420300409)
  - Walton, M., Hall, J., Guest, D., Butubu, J., Black, K., Beardsley, J., & Vinning, G. (2020). Applying one health methods to improve cocoa production in Bougainville: A case study. *One Health*, 100143. [www.sciencedirect.com/science/article/pii/S2352771420300549](https://www.sciencedirect.com/science/article/pii/S2352771420300549)



- Two additional papers are being finalised for peer reviewed publication. The Bougainville Reader is being developed. The Reader comprises articles, observations and lessons learned written by team members.
- The project was featured in the Post Courier, National and on TV WAN;
  - [postcourier.com.pg/australia-supports-bougainvilles-home-made-chocolate/](http://postcourier.com.pg/australia-supports-bougainvilles-home-made-chocolate/)
  - [www.thenational.com.pg/cocoa-project-benefiting-2000-plus/](http://www.thenational.com.pg/cocoa-project-benefiting-2000-plus/)
  - [www.facebook.com/watch/?v=545057509539046](https://www.facebook.com/watch/?v=545057509539046)
- Five Cocoa Market Newsletters were compiled and distributed. Increasingly, the newsletters are generating questions from the recipients, demonstrating there is an interest and demand for information on cocoa marketing.
- Grant Vinning produced a detailed study of the trade in value-added cocoa products in New Zealand and Australia. A summary of the research is that New Zealand per capita consumption of cocoa and cocoa products is twice that of Australia.
- James Butubu has compiled an analysis of cocoa rehabilitation as a rapid alternative to replanting. He will work with Phil Simmons to develop a cost/benefit analysis of rehabilitation compared to replanting.

### Lessons learnt

- The main lesson from the COVID-19 pandemic and SoE has been to use the opportunity to plan the transfer of responsibility to our Bougainville partners in anticipation of the end of the project.
- After 90% canopy removal and reconstruction, the response of yield of 1,800kg dry bean/Ha is possible with small clones after just 18 months of rehabilitation. The clones responded differently, however the selected and released clones still maintained their high yield (see Bougainville Reader for details).
- Our observations show viability of strip and/or alley cropping with 3-4 planting cycles of annual crops such as vegetables or rice integrated at between 50% rehabilitation canopy removal stage and strip (space) closure with new canopy regrowth (see Bougainville Reader for details).

### East New Britain

- On 6 May, Trevor Clarke and David Yinil led a large group from the Cocoa Board REDS staff at Tavilo (including the new plant pathologist, Anne, and entomologist, Rodney, post-harvest processing staff Kenny Francis and Urban Kabala, agronomists Peter Bapiwai and Chris Fidelis, and staff from the nursery) to visit the solar dryer being constructed at the cocoa block of Otto Koimba (Manager, Tokiala Plantation) at Utmei near Vunapalading. The group saw Otto's budwood garden and healthy clones, and also inspected severe Phytophthora stem canker in cocoa clones planted under the PPAP program 5 years ago. The two important clones B1 and B2 appeared to be the worst affected and they are developing a reputation for producing well for 5 years and then declining. The visit inspired further work on the susceptibility of the latest release CCI clones to canker, comparison of the susceptibility of clones and seedlings, and study of the yield decline noted in the clones. David also wants further work to be done on top grafting instead of budding, which will produce a higher rootstock stem less prone to canker, and a higher jorquette. The visit reinforced the importance of further work to develop planting of seedlings as well as clones. It was a good bonding and much needed confidence-building exercise for the Tavilo staff, stimulating new research ideas.
- A survey form to assess the success of Cocoa Model Farmer-Trainers and farmers groups was developed with the help of George Curry and Gina Koczberski at Curtin University. All project coordinators and George, Gina, Phil and Trevor contributed to on-line assessments of the research and development priorities for cocoa farming in PNG and the Pacific.

### Highlands

- John Konam and his team continued to work on village cocoa development in the highlands with the support of Asia Pacific Rural Projects (APRP). John has written to the Cocoa Board CEO in May requesting for Peter Bapiwai, Agronomist, REDS to be seconded to the Highlands to work with 2414 Ltd. as a cocoa agronomist and interim Highlands Regional Cocoa Project Manager to continue the ACIAR work and undertake wider the cocoa development in the highlands. 2414 Ltd. is also negotiating to engage Mr Paul Gende, former Cocoa Entomologist at CCI, now based in the Solomon Islands.
- Trevor visited the highlands sites with John Konam and Peter Bapiwai from 24 to 29 May, and held discussions with Mr Paul Java Director DAL Highlands Region, Mr Naisman, Senior Crops Officer, Mr Bubia



Moses, Director, and their staff at DAL Eastern Highlands in Goroka. He met staff of 2414 Ltd. in Kundiawa and discussed further development of cocoa in Karimui, and met with Mrs Bomagai Wei who is planting 60,000 cocoa seedlings and clones in the Gumine Bomai district. The team visited the cocoa nursery under construction and young cocoa plantings at Forapi in Lufa. In Banz in Jiwaka Province they held a large meeting with members of the Youth and Women in Agriculture group and representative of the provincial DAL, including the Director Mr Abe, Anthony Keru and other staff and inspected a nursery with 20,000 seedlings ready to be transported to Upper Jimi where farmers are preparing land to plant them. The project will help with transport. After repairing a seized wheel bearing on the project vehicle, originally bought second hand and repaired by John, the group drove to Mt Hagen for meetings with Mr Martin Pitt, Provincial DAL Manager, and Libai, crops officer and discussed cocoa introductions at Baiyer River and Nebliyer. They then drove part way to Baiyer River intending to see the cocoa nursery of Mr Kaunsel but had to abandon the trip because of the overheating wheel bearing. The first nursery was destroyed in tribal fighting, but 50 seedlings were recovered and planted out and are now doing well in the lower Baiyer River area that is suitable for cocoa and has coconut palms growing. There has been a second planting of seedlings at Mr Kaunsel's place.

### East Sepik

- Jonathan Poema (Krisawa), the CMFT at Paliama, on the main road from Wewak to Angoram and Yangoru, has been very active in developing a budwood garden, large nursery, goat colony and conducting awareness meetings and training sessions in many nearby villages, including Passam No.1, Marik, Ferix and Passam Inland. He has received a motorbike from the project in order to service his many sites and improve his access to Wewak where he is a radio presenter. A healthy male kid goat was born on 8 June to the young female in the goat colony at Paliama (see photo).
- Trevor sent 20 cartons of his new cocoa farmers handbook, 'Pacific Islands Cocoa Book', via Agmark shipping to Timothy Sam, our coordinator in East Sepik, for distribution via Cocoa Model Farmer Trainers (CMFTs), schools, the DAL network, correctional institutions, and other cocoa buyers and exporters.
- On 1 May, Timothy conducted three days of budding training for 70 farmers at the Haripmo National Cocoa Project site in East Yangoru. Cocoa Board staff from both the REDS and Field Services Sections took part. Cocoa books were presented to all participants.
- Dr Rabi Rasaily, Technical Specialist, EU-FAO Support for Rural Entrepreneurship Investment and Trade (STREIT) Project and team visited Mr Wilson Miroi's nursery, budwood garden and solar dryer site at Poro, West Sepik on 11-12 May and commended his contribution on the development of cocoa production in the province. They invited him to the cocoa exporters' roundtable meeting which STREIT program has initiated to discuss issues and challenges in the cocoa value chain. The program will work with Wilson to further promote cocoa development in the province.
- On 7 June Timothy Sam and his team conducted a cocoa budding and training session at the Bana Project site, followed on 9 June by an all-day cocoa budding and training session at Dreikir past Maprik, nearly 6 hours' drive from Wewak, celebrated with the Facebook posting '*Wok kakao mas go hed yet, greater Sepik bai yumi stap* – a beneficial cash crop that generates income for farmers', which summarises the basic aim of the ACIAR project.
- On 11 June, Timothy met with the Principal of Passam National High School to continue the collaboration to develop a cocoa farming project there. The team began lining for cocoa planting and Trevor visited the school on 24 June to plan the layout of the budwood garden. Timothy is now working with three schools in the province – Brandi Secondary School, Passam National High School and Maprik Secondary School, all intending to establish cocoa farms as a teaching and money-generating activity. He considers the vital knowledge and skills for cocoa growing, processing and marketing gained will be very important for the many students who will return to their villages and become professional cocoa farmers.

**Figure 3:** Presented by Timothy Sam of Trevor's cocoa books to the principal of the Passam National High School, Mr Sampson Patiki.



- On 19-20 June the first training session under the EU-FAO STREIT Program in Wewak District, Wewak Island LLG, was conducted on Mushu Island just off the coast of Wewak. 32 farmers did hands-on budding training and many women participated (gender equity being a key component of the STREIT Program). Each farmer received a copy of Trevor's Pacific Cocoa Book.



**Figures 4, 5, 6 (above) and 7 (below):** Budding training at Mushu Island.



**Figure 8 and 9:** Presentation of Trevor's cocoa book and budwood sticks to farmers, Mushu Island.

- Trevor, accompanied by Anton Varvaliu and Kenny Francis from Cocoa Board REDS, Tavilo, visited East Sepik from 21 to 26 June. They visited Jonathan Poema's group at Paliama to discuss the training sessions by Kairak (late July) and Josie Saul (September) to be conducted for about 30 participants at the site. Jonathan is now overseeing 18 farmers groups with 15 nurseries (2,000 seedlings each, in polybags bought with funding by the local MP Mr Kevin Isifu). The male goat born to the Paliama colony (now three males and one female) was observed. Trevor has written lyrics for a cocoa song to be put to music and recorded by Timothy and broadcast by Jonathan on the local FM radio station. The project was discussed with the Sepik Regional Coordinator for the Cocoa Board, Darryl Worowan, who has offered to promote solar dryers and has been registering them in the Sepik. The CMFT at Bararat, Scott Rambenari, was visited and is now going well. He is assisting 29 cluster groups with about 1,000 farmers. Two of his groups were visited, travelling along bad roads, an obvious impediment to rural development which is being addressed by the EU-FAO STREIT Program. The group at Timbunlangua led by councillor Suni the farmers group is about 50 strong. They have requested basic cocoa tools and are rehabilitating trees with bush knives. Trevor distributed some cocoa books and discussed rehabilitation and pruning. The Rotundogum group led by Valentine Weringu has 50 members in two teams. They showed fire ants protecting cocoa pods from CPB. These areas are isolated but



have a large farmer population needing support. It was evident that many farmers are seeing cocoa as a crop that can provide cash income to lift them out of poverty.

- The team visited Nola and Chris Sasingian at Yekimbole and saw the soil fertility trial being conducted in collaboration with the ACIAR Soils Project led by David Yinil, Damien Field, Kanika Singh and Chris Fidelis. Gliricidia is growing well on the kunai grassland where the soil has been ploughed and aerated. Cocoa clones have now been planted. Trevor, Anton and Kenny (Head of Post-harvest Processing, REDS, Tavilo) observed the three solar dryers at Yekimbola and got the sales records. Their company has sold 99 bags of cocoa (6 tonne) since Nov 2018 at an average price of PGK450 per bag. The Globe cocoa exporters have been paying a premium for solar dried cocoa. Following discussions with Anton and Kenny, it is anticipated that our project will present the work done on solar dryers at a review with Cocoa Board later in the year to help persuade the Board to support the use of the dryers.



**Figure 10:** Goats, mother and son, with a young carer at Paliama, East Sepik



**Figure 11:** Cocoa farmers handbooks being distributed at the Correctional Institution, Wewak where Inspector Zach Huasimba and Corporal Boni Dalu are conducting a cocoa farming project for inmates.

- On 24 June the team met with Dr Rabi Rasaily to discuss the EU-FAO STREIT Project and how ACIAR can best collaborate. Timothy Sam, Joel Hori and Douglas Kawasi are involved in both the ACIAR and FAO projects. The FAO team is basically following our program by establishing groups of farmers in villages, with a target of 20 groups per district over 6 districts. They will continue to get budwood from our CMFTs to cater for the new groups. Because of UN restrictions, new cocoa plantings are being discouraged and they are concentrating on rehabilitation of old cocoa blocks. The FAO program has a budget of €83 million, with 70% to be spent on infrastructure such as feeder roads, telecommunications and solar energy. They were conducting 2-day training sessions on financial literacy before the corona virus lockdown, and are interested in observing our training programs conducted by Kairak (UNRE) and Josie Saul's Family Farm Team.
- A final staff meeting was held with all Cocoa Board REDS extension staff, including Anton Varvaliu, Kenny Francis, Timothy Sam, Joel Hori, and Douglas Kowasi. The possible transfer of Joel to Milne Bay and Douglas to Kerema is still on the table although the Cocoa Board has no funds available for transfer at present. Their transfer would be a big loss for the EU-FAO project as all three have been allocated geographic areas of East Sepik to oversee. The need to certify budwood gardens was raised and Anton will take up the issue with Cocoa Board management.
- Before departure back to Kokopo, the team visited the cocoa exporting companies Outspan, Waihu, Globe and Elliven to deliver 80 cocoa books to each for distribution through their networks. Books had been shipped to Wewak by Agmark. It was evident that there is a good competitive cocoa buying situation within East Sepik. They also visited the Hawain Station, which has deteriorated since the departure of John Meth.

Timothy maintains a small nursery operation using materials from the budwood garden there. Trevor was able to observe the CPB resistant clone identified by the CMFT Cherobim at Rainimbo near Hawain. It has a thick pod husk and stone cell layer which are likely to reduce penetration of the pods by the moth larvae. On the return flight to Kokopo, the team was forced to overnight in Lae, which enabled them to meet Mr Anton Ningi, the Cocoa Board coordinator in Lae, who has received one box of cocoa books for distribution and requested another two boxes.

## Madang

- On 23 April the Suaru Cocoa Development Project funded by the ACIAR project in Bogia District conducted its first cocoa training for its 43 cluster group leaders, representing 450 farmers from both coastal and inland areas of Almami Local Level Government (LLG) area. The training was attended by 50 male and 10 female participants, including other interested farmers. Under the guidance of the ACIAR/REDS team, training was organised and run by Mr. Michael Kevei who is the nursery manager and the leader of the central Suaru group. The training was assisted by the Program Manager of DAL Bogia District, Mr. Simon Sakipa, and his staff, Mr. Anton Warim, who were very supportive both in preparation and during the training program. Six training stations covered cocoa seed germination and planting, mixed crop farming, chupon budding on existing hybrid cocoa trees, block rehabilitation, budwood gardens, tipping and formation pruning, and budding demonstrations and hands-on training. The Suaru group aims to develop a solar dryer to be ready for a field day for the extended cluster groups in September. Bofeng Mebali considers that the Suaru Project will continue when the ACIAR project ends in 2020 because DAL Bogia is now fully involved and committed to see it become a model project for cocoa development in Bogia District. The Project has the support of the LLG Ward Member and Almami LLG President as well as the Bogia open Electorate Member of Parliament, Honourable Robert Naguri. Michael is a very competent and influential Kukurai (Clan Leader) who understands all the practical nitty gritty of cocoa development and wants to see all Bogia farmers move the cocoa program forward. Bofeng expects that the Suaru Project could become a Model Project where LLG, DDA and District DAL are partnering with the national Cocoa Board REDS and a donor funder (ACIAR) to assist farmers to achieve much needed development. Bofeng and Aitul continue to conduct excellent training sessions and write excellent reports under the rubrics '*Kakao em ATM long haus dua blong yu*' ('Cocoa can provide money for your household') and '*Lukautim kakao na kakao bai lukautim yu*' ('Look after your cocoa and it will look after you').



**Figure 12:** Formation pruning demonstration Suaru, Bogia, Madang Province.

- During May the coordinating team visited the Rempi/Tawa project area (budded 120 rootstocks working with 2 men and 3 women farmers), Amele extension cluster (one block rehabilitation and 100 chupons budded by 5 men and one woman; budwood garden completed by infilling), Mabonob (solar dryer being constructed), the Yelso/Hiroro cluster group (awareness meeting for a new group of 20 men and 4 women, led by Kokurai Omurup), Aihab cluster group (10 blocks being rehabilitated), the Aropa cluster area (where 22 farmers have planted over 6,000 seedlings in the field for later field budding and 13 blocks are being rehabilitated), Danaru CMFT site (where the budwood garden was completed by infilling), Maono cluster area (budwood garden needs infilling), Mileng cluster group at Amele (6 blocks being rehabilitated). Later Bofeng and crew took Hiroro farmers to visit the block rehabilitation activities of the Aihab cluster group, with 12 farmers participating.
- Chris Anton returned from the Rai Coast on 11 May and reported that the Galeg group was inactive but that a new cluster group was becoming established at Yamai. The Amele budwood garden was completed by infilling on 13 May.
- On 20 May Bofeng took a Kumisanger (Rai Coast) farmer to see the model farm at Balama, especially the solar dryer. The Madang coordinators are doing good work in taking farmers to visit and learn lessons from other model sites.



- On 17 May the team visited Burag Village on KarKar Island and on 23 May Ronny Sibert visited the Mangar cluster group on KarKar Island to continue establishment of a budwood garden.
- From 18 to 25 May, the Madang ACIAR/REDS team facilitated five meetings, demonstrations and discussions with satellite family groups (Sition Gogowi Laleg and Laleg families) at Hobe Village, Amele LLG, Ward 15, South Ambenob, Madang District, initiated and led by the CMFT from nearby Tamane Village, Mr Kokurai Omurup, who was one of the first CMFTs in the cocoa project and has become an active trainer of farmers in surrounding villages. The farmer-leader in the village, Mr Sition Gogowi, invited Kokurai to demonstrate rehabilitation of overgrown SG2 cocoa trees and by the time of the ACIAR/REDS visit the family group had pruned 122 trees. Trees received from Murunas and planted in 2007 had not grown well due to poor drainage and inadequate shade. The family was advised to make drains and plant shade trees. They also have vanilla which will benefit from the cocoa block rehabilitation. The village land is on the fertile flood plain of the Gum River near Madang town but will require drains to enable good production of cocoa, vanilla and food crops. ACIAR/REDS staff along with Mr Alex Williams of the Cocoa Board Field Services office visited the village on 18 and 25 May and demonstrated many aspects of cocoa and vanilla management. By the end, a total of five brothers and their families (Laleg, Russell, Abegul, Dawon, Apo, Siria) were involved and have formed a pruning gang to rehabilitate their blocks.
- Bofeng noted the renewed interest in cocoa development by family groups forming under Cluster Programs in Madang, Bogia, Rai Coast and Usino Bundi Gama Districts. The work is now being taken over by CMFTs such as Kokurai Omurup who are organising visits and doing on-the-job training. Kokurai Omurup is recognised as an ACIAR representative, training Amele people in cocoa block development, rehabilitation and chupon and seedling budding.
- The Madang coordinating team have been discouraging the establishment of central nurseries and instead encouraging the setting up of small family nurseries on farms.
- On 2 June Bofeng and team visited Ombromena hamlet in the Walium area, Ward 13, Usino LLG, Usino Bundi Gama District and talked to farmers and their families from the 5 main villages (Ere, Urigena, Nauna, Ayambe and Yakumbu) about the ACIAR/REDS Project. The families wanted to be fully involved in the program before it ends in 2020 and decided to organise themselves to begin block rehabilitation and undertake training. The population of over 3,000 voters already have over 10,000 hybrid cocoa and some clones obtained from the former Murunas CCI nursery but all cocoa blocks have been abandoned since the CPB incursion in 2014, all trees have become over-grown, and most fermentaries have stopped processing cocoa. All cocoa farmers have reverted back to growing peanut, watermelon and subsistence food crops for cash income. Four farmers (Fox Lumzega, Ensen Toko, Licks Ziek and Franky Foto) agreed to become initial model farmers for the Walium area. On 4 June, the four farmer-leaders and three other interested farmers attended demonstration training on pruning over-grown SG2 hybrid cocoa, clone pruning, chupon budding, top grafting, and use of a chainsaw which was much appreciated by the group. It has become evident that a small chainsaw is essential labour-saving equipment for cocoa block rehabilitation, and having a chainsaw can greatly facilitate the radical pruning of cocoa and shade trees required to revive old overgrown plantings. At the end of June, a follow-up visit was made to assess grass cutting and shade maintenance in all four blocks, and supervise clone pruning on Fox's and Ensen's blocks and tag clones as a future source of identified budwood. The four farmers agreed to work on a target of a half-hectare (300 cocoa trees) each for this year and intercrop with food crops and later go into vanilla intercropping in 2021.
- Trevor travelled with Anton Varvaliu, Head of Extension Services, Cocoa Board REDS, to visit the Madang coordinating team from 15 to 21 June and made arrangements with Fr George at Alexishafen for further training sessions to be held at the station for Kairak (record keeping, small business management) in July and Josie Saul and Robert Taula (Family Farm Teams) in September. The team visited the new Amele CMFTs, Jacob and Christine, and a new group in Ward 15 at Ambenob where Babel Bibin and Charley Sele are forming a new group with 50 members of an extended family, linked to the original Tamane CMFT group driven by Kokurai Omurup. Bofeng demonstrated pruning for block rehabilitation on the farm of Mr Galasa Esui. The next day they visited the new family group in Hobe Village and saw the group rehabilitating old blocks with radical pruning, and visited other new cluster groups organised by Kokurai Omurup at Wafen (led by Uraiah with 20 members, saw rehabilitation of blocks), and the hamlet Water Gum (Baful Hitov, 60-70 members).
- Trevor, Anton and the coordinators met with Mr Godfried Save, DAL Madang, and discussed the urgent need to revive the hybrid seed garden at Murunas which Godfried strongly supports and has discussed already with OIC Murunas, Dr Eremas Tade. On a later trip to Bogia, the team visited Eremas at Murunas to promote the matter. It was agreed that Anton should encourage the Cocoa Board management to consult with KIK management (CEO Allan Aku) about restarting a hand pollination program to produce SG2 hybrid seed at

Murunas. At present the lack of hybrid seed, following the take-over of Murunas by KIK, the disruption at Tavilo and the loss of the seed garden at Kopkop, New Ireland linked to its take-over by KIK, is seriously inhibiting cocoa development throughout PNG.

- At Suaru village the team saw that the very active CMFT Michael Kevei has timber and stones ready to build a solar drier. Each of the 26 group members has received 350 clones from the nursery and distribution of another 10,000 is planned to give each farmer a hectare of clonal cocoa. The team saw about 30 small nurseries with coconut frond cover for root stock production and the group has bought planting bags. A meeting was held with about 40 men and 20 women and 30 of the new Pacific Islands Cocoa Books were given out. The original group is the focus of 43 clusters with 28 trained already on budding. The group has a budding team of 17, aiming at 30, and is rehabilitating old blocks with radical pruning. The extended village group, which was very poor and started slowly on difficult land adjacent to kunai grassland, now has 623 farmers with potentially up to 1,300. The team visited a group at Wanuru, Ward 9, Almami LLG, leader Mr Manual Sonomo with about 150 members, wanting assistance and 40 cocoa books were given out. It was agreed that the project will provide an old motorbike for the Suaru CMFT Michael to help him visit the dispersed groups. The clear message within the groups is not to wait for the Government but to go ahead with their own resources. With this aim, the new project recommendation for cheaper field nursery construction using local materials, direct field planting, and cheaper tools for budding is opportune.
- On the return trip to Madang, cocoa handbooks were given to the Amiten and Gugabor groups, and the Rempi women's group, led by Agatha Igag, was visited. Before departure for Wewak, Trevor and Anton reviewed the CMFT survey forms with Bofeng and Aitul.
- On 21 June Trevor and Anton flew to Wewak and met Kenny Francis, head of post-harvest processing Tavilo, on the plane.
- Dr Mathias Faure, formerly of PPAP and now working as a consultant/farmer near Madang, located an outstanding SG2 hybrid cocoa tree (see photo) planted over 10 years ago on the farm of Alua Sorum, at Gonoa, Transgolgol, Madang District (see photo), and publicized the finding on Facebook. He has been encouraged on-line by Jimmy Risimeri, our first coordinator in East Sepik now with KIK, to get the farmer to record the yield, cocoa quality and pest and disease occurrence over several years and to use budwood from the tree to chupon bud a group of poorer SG2 trees on his farm and record their performance. This is an important activity that should be promoted in future projects. Many well adapted, good yielding, pest and disease resistant types will have survived from, and been protected by farmers, from extensive plantings of genetically diverse hybrid cocoa seedlings from the 1980s. It has become apparent that Facebook is an excellent forum for sharing ideas and findings.



**Figure 13 and 14 (above):** Potentially outstanding SG2 cocoa seedling identified by Mathias Faure on Alua Sorum's farm, Gonoa, Transgolgol, Madang District.

#### **New Ireland**

- The coordinator John Joseph visited all project CMFT sites twice in May and June, except for the isolated island sites on Mussau (Tavol/Tairairai, a 7-hour boat trip from Kavieng) and Djaul, and Komalabuo and Dampet. He completed the CMFT assessment forms for Marinsoan, Sena, Bo, Burau, Karu, Lemeris, Katedan, Langenia, Luapul, Manggai and Panamecho.



- The new cocoa blocks planted to both SG2 hybrid seedlings and CCI clones under the project are now beginning to bear (showing flowering, cherrille setting and mature pods).
- On 17 June training sessions on juvenile in the nursery, and normal seedling budding in the nursery and field, and block rehabilitation by chupon budding were conducted at the isolated CMFT site led by George Tabakua at Marinsoan in southern New Ireland, about 8 hours' drive from Kavieng. See the attached photos. Sixteen men and five women attended, and all received a copy of the practical handbook 'Buk Bilong Kakao Fama'. Previously a farmer in this group had set up a budwood garden, nursery and model cocoa block by following the book, with little outside help.
- Cocoa planting material was distributed as follows: Sena - 150 clones and 455 SG2 seedlings, Bo - 66 clones and Laraibina - 200 clones. Cocoa has been interplanted with galip nut at Laraibina.
- John and the CMFT at Laraibina, David Waulis, are still awaiting delivery of goats from UNRE for breeding and distribution to other project sites. Goat husbandry and training is very important as goats are quite new to New Ireland Province. They will be especially important in areas like Mussau Island which has a high proportion of Seventh Day Adventists.



**Figures 15 and 16 (above):** Cocoa farmers attending training session on budding and other aspects of production at Marinsoan, southern New Ireland.

## Sweetpotato

HORT/2014/097

- A demonstration irrigation system has been established at one of the participating farmer sites in Asaro. The crop can be grown in rows rather than the traditional mound system (see image below). Many of the crop management changes being used in the demonstration trial were picked up by the farmer on the project supported study tour to Australia in 2019. Yield and quality assessments will be completed at the demonstration site. The chairman and two board members of FPDA recently visited the site and commended the farmer for his work in developing a more commercial approach to kaukau production [postcourier.com.pg/kaukau-farmer-appeals-for-help](http://postcourier.com.pg/kaukau-farmer-appeals-for-help)
- Trials evaluating the performance of '*klin kaukau*' (clean sweetpotato) in comparison to traditional planting material have been completed at sites in WHP, Jiwaka and EHP. COVID-19 travel restrictions prevented harvests at several sites, and tribal violence has disrupted trial re-establishment at one site in Jiwaka, but the project team is on track to complete the data collection required to document the improved performance of clean kaukau in commercial production.
- The participating farmers have managed to maintain clean kaukau vine sales and distribution despite the COVID-19 travel restrictions. Notably, Niugini Fresh Limited (a subsidiary of the Kaia Works Road Construction company based in Chimbu) purchased over 2,000 vines to generate clean planting material to distribute to the 250 contract growers that supply the company with produce to market in Port Moresby. Vine sales recorded in the last three months have exceeded PGK1,400 (down from PGK3,236 in the first quarter) which provides a good income source for the participating growers to supplement the sales of kaukau grown from their clean planting material.





**Figure 17:** Demonstration irrigation system in Asaro.

- Technical training has been conducted with farmer communities in Jiwaka and EHP. The Jiwaka Organic Food Farmers' Co-operative has established a business selling biscuits, cakes and noodles prepared from kaukau flour, and received training in construction and operation of a solar drier for flour production as well as basic financial management skills. The Meteyua Village community were the first to receive business development training using the course manual developed as part of the accredited Community Development Worker program. This training has been adopted by National Development Bank (NDB) as a requirement for farmers intending to apply for loans through the PNG Government agriculture assistance program.
- Chris Gard and colleagues have prepared a blog describing the development of the Community Development Worker National Standards and training program. This blog will be published on DevPolicy.
- The Queensland DAF and NARI project members have completed drafts of a series of 12 clean kaukau factsheets for growers. An updated Laboratory Manual covering the initial variety cleaning, multiplication and management of plant material has also been produced.

## Family Farm Teams

A project manual for use by smallholder families in Timor-Leste has been developed, building upon the Family Farm Teams methodology developed in Papua New Guinea. This work is part of TOMAK (*To'os ba Moris Di'ak*, or Farming for Prosperity) which is a 5-10 year agricultural livelihoods program funded by the Australian Government in Timor-Leste.

'Family Decisions: How farming families can work together as a team' facilitation manual [http://tomak.org/wp-content/uploads/2020/06/20200526-Family-Decisions-Training-Manual\\_Eng-web-res.pdf](http://tomak.org/wp-content/uploads/2020/06/20200526-Family-Decisions-Training-Manual_Eng-web-res.pdf)



### **The Galip Nut team submitted their final report and the highlights included;**

- A demonstration factory was established at NARI producing over 2.4 tonnes of processed products in the final year of operation. Technical research underpinning this included depulping, drying cracking roasting, nut quality, food safety, shelf life and nutritional analysis.
- A range of products were developed, and markets tested in East New Britain and Port Moresby. The prices for final product ranged from PGK140/kg - PGK170/kg. Products were formally launched in mid-2018. The sales trials delivered consumer sales for retailers exceeding PGK450,000. The factory was unable to meet the demand from Port Moresby markets and products were frequently out of stock. Over the initial six months, production capacity and supply was unable to provide sufficient stock to maintain allocated shelf locations. Consumer demand was overwhelming resulting in many stockouts and empty shelves. It is quite likely that the factory could have achieved PGK1 million revenue if supply had matched demand.
- A range of training interventions were delivered for smallholders, small-scale entrepreneurs and SMEs, with an emphasis on female smallholders and microenterprises. These included quality standards for supplying to the factory, factory awareness tours, small scale processing and value adding, food safety, and processing methods.
- Negligible volumes of processed canarium products were traded in 2014 prior to the start of the project, and there were few opportunities for smallholders to sell canarium to distant markets. The demonstration factory more than doubled production of processed nut products each year and over 1,300 farmers and entrepreneurs were selling to the demonstration factory by the end of 2018. The farm gate value of sales of unprocessed Canarium products to the factory was over PGK400,000 during the life of the project.

### **Impacts**

Private sector investors entered the industry in 2019 and at the end of the project there were four active processors. These were sourcing and producing their own value-added product separately to the NARI factory. The emerging industry has an estimated farm gate value of PK300,000 - PGK400,000 per annum, in addition to the demonstration factory. It has also created employment for approximately 40 people.

There is evidence that the emerging industry has improved livelihoods for female smallholders. Many women are making small regular sales to the factory. The impact stories emerging from women include:

- A local widow with seven children has been able to access additional income to support her family.
- A young mother of three sold 155kg of nut-in-pulp and was able to support her children financially which was a relief during a difficult time.
- A 15-year-old teenage girl was selling galip during the school holidays and using the money to pay for her new school uniforms.
- A young mother of three is selling galip to buy basics for the family and buy medication for her sick child.

The emerging canarium industry is at a critical phase and needs to harness the momentum built by this research. Further research on buying models, increasing supply, gender dimensions, increasing efficiency and mitigating risks such as the galip weevil is needed to build confidence of the private sector to invest to grow the industry, utilise the nut resources coming on stream and improve access to distant markets.

### **Demographics of galip suppliers to factory**

Data was collected on a sample of galip suppliers in 2017 and again in 2018 to understand the demographic and geographic supply of the galip using the CommCare app. The main findings were:

- The purchase at the factory gate was 79.2% of the total purchase in 2017 and increased to 96.7% in 2018.
- Over 85% of galip was sourced from wild trees in 2018.
- Most of the nuts originated from Gazelle district in both 2017 and 2018.
- The majority of galip suppliers were male.
- The average income per sale was between PGK60 - PGK90.
- 78% (2018) and 45% (2017) of the suppliers had between three and seven children in their family.

The data gathered at the point of sale for smallholder farmers suggested that more women were selling to the factory when the purchases were made at the farm gate rather than when the purchase were made at the factory door. This could indicate that women are facing more difficulties in transporting their product to the factory and/or

that men are taking control of the galip income now that it is moving beyond the informal economy. This raises further research opportunities around women's involvement in the industry as it further develops and a challenge to industry to create best practice purchasing systems that can most benefit the work of women and children rather than commoditise, and remove, what is an important part of their informal economy.