

Transformative Agriculture and Enterprise Development Program

TADEP+ Update

July + August 2019

Key program activities

TADEP+ Annual Report 2018/19

The TADEP+ Annual Report has been completed for this past financial year and is available for download:

- [Click here](#) for a low resolution version [2.9MB]
- [Click here](#) for the original version [28.3MB]

The Annual Report distils the significant progress of the program against the guiding principles (gender equity and women's economic empowerment, and private sector-led development) and towards each of the program elements (communication, collaboration and capacity building). The document also features a summary of the Program Mid-Term Review recommendations, annual updates from each of the TADEP+ projects and reporting against the Program Performance Framework.

PNG Impact Conference

The inaugural PNG Impact Conference was successfully held in 2017 with the next event scheduled for this December 2019, and will again be co-hosted by the University of Papua New Guinea (UPNG) and James Cook University (JCU). The Conference will be held in Port Moresby on 3-4 December and is free to attend. The Conference will:

- Promote dialogue over how research and research policy can best support aspirations for a prosperous, safe, inclusive and sustainable society.
- Showcase a cross-selection of active research projects, across the sciences, social sciences and humanities, delivering significant societal benefit for PNG.
- Provide a platform for network-building among researchers, research institutions and research stakeholders active in PNG.

PNG Impact is for anyone with an interest in the role of research in societal transformation. This includes, but is not limited to: policy-makers, donors, philanthropic organisations, business, research leaders, researchers, students, civil society representatives and community members.

- [Click here](#) for the event website
- [Click here](#) to register to attend
- [Click here](#) to submit an abstract (which automatically registers you to attend)

Key dates

Mark these dates in your diary and calendar:

- Pacific Week of Agriculture, Samoa: Monday 30 September to Friday 4 October
- PNG Impact Conference, Port Moresby: Tuesday 3 and Wednesday 4 December

Key project activities



Bougainville Cocoa

The 2019 Bougainville Chocolate Festival was held on 7-8 August in Arawa and was a great success. The festival provided the opportunity for organisations such as DPI, PPAP and others to display and provide information to farmers and SME groups on income and farm diversification with vegetable/fresh produce, livestock, Galip Nut (PPAP) and the importance of farmer and community health.

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

PNG Cocoa

In late July, project staff from Madang and East Sepik attended the Lae Cocoa Show of Excellence. Two farmers from the ACIAR/REDS Cocoa Project in Madang were selected in the final 30 and a team accompanying the farmers to Lae included ACIAR and Cocoa Board staff, Madang district and DAL staff and Madang Provincial DAL staff. The two farmers placed second and eighth, both outstanding results and significant, given one of the farmers is using a newly built Solomons solar dryer.



Family Development Training was delivered to eight Cocoa Model Farmer Trainers (CMFTs) in mid-June, covering topics such as Working

A regional field day was held near Wewak on 5 September and included displays demonstrating all phases of cocoa development from nursery, bud grafting, to block pegging, lining, field management, and post-harvest processing including fermentation, drying and taste profiling.

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



Sweetpotato

Two important commercial kaukau varieties, Rachael and Korowest, have been added to the *klin kaukau* collection at NARI Aiyura research station.

The first exports of kaukau from PNG to Singapore were reported in the PNG Post Courier <https://postcourier.com.pg/morobe-lead-first-kaukau-export/>

Chris Gard and Kirt Hainzer have developed a new training module for the project, *Understanding markets and the business plan* training.

[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

TADEP is co-funded by the Australian Centre for International Agricultural Research (ACIAR) and the Department of Foreign Affairs and Trade (DFAT).



Australian Government
Australian Centre for
International Agricultural Research



While two of the initiative TADEP projects have concluded, they have evolved into an ACIAR Small Research Activity (SRA) and another ACIAR project, respectively, 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

In the first week of the July 2019 mid-semester school break, over 70 teachers from throughout New Ireland converged on Our Lady of the Sacred Heart International School (OLSH) in Kavieng to improve their excellence in teaching during a four day workshop.

The focus of the workshop was to link essential skills as developed in the University of Canberra's "Family Farm Teams Manual" such as functional numeracy, healthy lifestyles and nutrition, caring for country and sustainable futures, economic development and personal financial stability, to PNG curriculum and classroom activities.

[Click here](#) for the full Family Farm Teams update



Galip Nut

The Galip Nut project is currently going through a transition phase between the former project, jointly funded by DFAT and ACIAR as part of the TADEP, and the new project which is being funded by ACIAR.

Prof Helen Wallace has changed institutions and now works at Griffith University.

Sales of the products has remained strong and we are almost out of stock of galip nut products. The project team are currently waiting for the galip season to start while we finalise the new ACIAR project is finalised.

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

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Bougainville Chocolate Festival

- The medal winners for this year's festival were:

Chris Potu	North	Gold
Joseph Loworo	Buin	Gold
Jenny Enoch	Central	Gold
Vincent Matenua	South	Silver
Justin Dissing	Central	Silver
Peter Ilakot		Silver
Leo Arabi	Central	Silver
Pio Paro Matavana	North	Silver

- There were main displays and information sessions from the ACIAR Project HORT 2014/094 team and partners. These included;
 - Chocolates were sold by 2018 Bougainville Chocolate Festival gold winners (Steven Saveke, Benjamin Tatou, Donald Nakuri, Cecilia Popui, and Desmond Newton) with chocolates made by Queen Emma Chocolates using their gold winning beans.
 - Display of chocolate making process using best-quality and poor-quality beans.
 - Demonstrations and information (fact sheets) were displayed on Health/Nutrition (Sydney University), Goats (UNRE), Cocoa information and clone propagations (PNG Cocoa Board).
 - Field trip for farmers to Manetai to see demonstration of IPDM and compost production.
 - Fermentation demonstrations for farmers to learn.
 - Farmers and Chocolate Judges Seminar provided an excellent opportunity for the judges to provide feedback on the quality or flavour of the 42 chocolate samples. Farmers were able to taste and grade chocolates made by each of the judges (chocolate makers) using the same beans. Some issues raised were the price and marketing of cocoa beans by small groups to niche markets, local processing of cocoa beans.
- Award winners - the Best of show price was taken by Mr Chris Potu from Kunua, North Bougainville with a value of PGK18,000 to be used in rehabilitating his fermentry/dryer, cocoa nursery and bud wood garden. Firstly, he will produce a work activity plan before accessing the funds from the project's DPI account.
- Two articles have been written for wider distribution. One dealt with the training of school students in chocolate making, the other on how the project is using the judging process for the Chocolate Festival as a vehicle for capacity building in the assessment of quality of the final chocolate.
- The judges' overall comments of the quality of cocoa submitted for the best cocoa award in 2019 were that there were fewer citrus notes and a greater degree of astringency compared with the 2018 entries. This could have been a result of the harvest occurring in a period of rainy weather, a fact that would impact on the fermenting and drying processes. This is an important preliminary finding because most assessments of a harvest relate to external quality attributes such as bean size and yield, moisture content, and smoke acquired during the fermenting and drying process and not to the internal parameters.
- The Festival judges spent time with Julie Rereve, Manager of the DPI's Chocolate Laboratory in Buka, advising her on roasting processes and the formula for the making of the final chocolate. One of the judges, Debb Makin from Ratio Chocolates in Melbourne, made a small presentation to Julie.



Figure 1 (above): Julie Revere DPI's Chocolate Laboratory Manager with one of the judges.



Figure 2 (right): Yvonne from DPI explaining soil management techniques.



Figure 3 (left): Trevor Clarke, Elizabeth Brennan, Elizabeth Pisiai and Prof David Guest attending the 2019 Bougainville Chocolate Festival in Arawa.



Figure 4 (below): Judges distributing their chocolates at the seminar.

- The judges also spent time in Arawa with Ishmael Toroama who has imported some chocolate making equipment. Their advice was extremely pragmatic such as the differences that can be made to the final chocolate with the lid being on the grinder compared with when the lid is off. They also suggested that he use a small food processor to grind the cold cocoa liquor into powder to make drinking chocolate. It appears that big food processors develop too much heat that is not good for making the raw powder.
- A number of growers now realise that size does matter when it comes to achieving economies of scale in logistics. The result has been the formation of a number of grower groups formed under the guidance of a leader who sets quality standards.



Figure 5 (top left): Hamatana Primary School winners of the School chocolate competition.

Figure 6 (top right): The Cocoa Board display with a fermentary demonstration in the foreground.

Figure 7 (left): Chocolate judging.



Recent project activities/outputs

- The ABG through DPI have now shown and are willing to fund build a bigger laboratory for commodity quality testing and monitoring and post-harvest processing research and development initially with cocoa/chocolate and others to follow on later. There has been a submission (proposal) made by ABG to source funding and awaits an outcome.
- The project has demonstrated how vegetable cultivation can be an important source for meeting health and nutritional requirements and income generation from our cocoa vegetable stripping cropping demo plot in Kubu. The first harvest were freely distributed to DPI and ABG administration staff families and will be available for sale in the future.
- An ACIAR Mid-term Review of the project was held from 1-9 August with the Horticulture RPM Irene Kernot, and external reviewers Trevor Clarke and Elizabeth Brennan. We await the reviewer's report.
- Interviews were held with shortlisted candidates for the Village Resource Centre Coordinator's role within ABG-DPI and an appointment will be announced shortly.

TADEP+ Collaborative Research Grant

"Examining ways to improve nutrition and food security in 'at risk' villages in Bougainville"

- A project team meeting was held to discuss progress and next steps for the Collaborative Research Grant project, designated the 'Nutrition and Vegetable Project'. In attendance were the Project Coordinator (James Butubu), Nutrition and Vegetable Project Team Leader (Francis Hurahura), Hub Coordinators (Eugene Hannett, Theodore Kisu, Elizabeth Pisiai, University of Sydney Project Leaders (David Guest and Merrilyn Walton) and TADEP+ Program Coordinator (Elizabeth Brennan).
- Introduced Team Leader Francis Hurahura to key people involved with the Project.
- Team has a set up a WhatsApp group to facilitate communication amongst team members.
- Meeting with Secretary of Health Clement Totavun who is very supportive and will become personally engaged with the project. The health department has plans to establish a nutrition institute.
- Village monitoring to commence on 29 August.

CSIRO/DFAT workshop on SDG 2.3

- Professor Guest was invited to a workshop convened in Canberra on 14 August to prioritise pathways towards achieving Sustainable Development Goal 2.3: “Doubling agricultural productivity and incomes in Southeast Asia and the Pacific”. A consensus was reached that the most likely pathway to succeed was through crop and livestock diversification similar to Objective 3 in the Bougainville project.

GAIN Workshop on Cocoa farming families

- Professors Guest and Walton are co-organising a workshop with the Global Alliance for Improved Nutrition (GAIN) in the Netherlands on 19 September to discuss the impact of health and nutrition on cocoa farming families. The goal is to engage stakeholders in developing a joint research proposal to investigate our project findings that health and nutrition constrain productivity in West Africa, extending the impact of ACIAR research.

General activities

- Trevor made regular visits to the Tavilo Research Station to discuss the program with REDS Manager, David Yinil, and other staff. He also visited the test Solomons dryer nearby at Tokiala to review progress in the use of solar-powered fans. From 1-9 August he was an external reviewer for Mid-Term Review of the TADEP+ Bougainville Cocoa project, which included attending the Bougainville Chocolate Festival in Arawa.
- Progress was made on the final writing and editing of a Pacific Farmers Cocoa Handbook and a Handbook on Cocoa Processing. A project proposal for improving cocoa quality in PNG was also drafted. Peter Walton peter.walton@stackyard.net uploaded the CCI Cocoa Extension Manual and the English and Tok Pisin versions of the CCI Cocoa Farmers Handbook to the Pacific Agricultural Information System where they are available for free downloading.
- In response to a request from PPAP leadership, Trevor supplied them with a list of our CMFTs in East and West Sepik who could supply new cocoa clones to their farmers.
- Staff from Madang and East Sepik attended the Lae Cocoa Show of Excellence on 25-27 July, conducted by the PNG Cocoa Board in partnership with the Morobe Provincial Government and Wafi-Golpu mining company. The show was in preparation for the entry of PNG's best cocoa beans into the 'International Cocoa of Excellence Competition', which is to be held in Paris on 30 October. Initially 182 cocoa 2kg bean samples were collected from farmers all over PNG and sent to Rabaul for quality testing and 30 farmers were selected to attend the show in Lae for final judging. Two farmers from the ACIAR/REDS Cocoa Project in Madang, Anton Higuai of Mabonob and Lesley Dadok of Balama, were selected in the final 30, and a team accompanying the farmers to Lae included ACIAR and Cocoa Board staff, Madang district and DAL staff and Madang Provincial DAL staff. The samples were tested for chocolate taste and quality at Lae international Hotel by a panel of 4 judges. Criteria for judging the beans were physical appearance (dark reddish brown), feel (solid, a bit crunchy, i.e. dry), cut test (no purple, slaty beans), smell (fresh, fruity, acidic, strong chocolate smell), pH (4-4.5, slightly acidic), fat content (56% or higher), moisture content (5.5-7.5%), shell content (less than 17%), sensory evaluation (not mouldy, excessively acidic or bitter, not smoky). Anton Higuai was placed second and Lesley Dadok eighth, both outstanding results. Lesley's result is significant because he is using a newly built Solomons solar dryer. First place went to Chefang Yarling of Morobe Province. The main cost for ACIAR/REDS Madang staff attending the show was borne by the ACIAR project. No expenses for provincial staff were covered by the Cocoa Board, which even requested (and received) PGK3,000 for travel allowances for their head office staff to attend. Aitul Weoh and Bofeng Mebali wrote their usual excellent reports on the show, Bofeng including his usual mantra 'Lukaotim kakau na kakau bai lukaotim yu'. A sample from one of our CMFTs at Karimui, Norman Mondo, was also judged and must have been placed highly as he was selected to be among the 50 finalists (worldwide) to attend the Paris Show, along with the Charis Cluster Group, Poro village, Sandaun Province, one of Wilson Miroi's CMFTs linked to the ACIAR project. In the main speech at the show, the Minister for National Planning, Richard Maru, urged a switch to solar dryers and the abolition of wood-fired kiln dryers by 2022, which is something of an over-reaction as most farmers currently rely on wood-fired kilns. The ACIAR project is promoting the use of solar dryers linked to the use of wood-fired kilns as needed during wet weather, and improved maintenance of the kiln pipes. The Minister promoted the establishment of four regional nurseries, overlooking the shut-down of the main nursery at Murnass following its take-over by KIK and the work of ACIAR in establishing

nurseries in many wards in New Ireland, Madang, East and West Sepik, several highlands provinces, and Bougainville. Kundiawa in Simbu Province will host the next Cocoa Show in 2021 and was named the 'Cocoa city of PNG' in recognition of the success of cocoa development in Karimui.

Madang Province

- Bofeng Mebale and Ronnie Sibert visited two CMFT sites on Karkar Island in Sumkar District on 8-13 July, at Kurumlang Village (CMFT Philly Ulan with 17 farmers, 1,200 clones planted, adequate budwood available to rehabilitate blocks) and Keviak Village (CMFT Levis Lapp). The projects are doing well. Discussions were held with the wives of the CMFTs and farmer members of their groups. They visited 17 gardens and collected planting figures for clones and seedlings from CMFTs and met over 20 farming families and community leaders who talked about how CPB had damaged cocoa production in their villages. They visited two budwood gardens at Keviak and Kurumlang and did field training on tipping, formation pruning and general tree management in the blocks. Two proposed new sites for budwood gardens were visited at Mangar Village (home of Ronni Sibert) and Burag Village (home of Delma Miriung). The new CCI clones are available at Kinim DAL station and these need to be tagged so that farmers can collect budwood for themselves. There is a need for establishing budwood gardens on Takia side of the Island so that farmers there can access the new clones.
- Family Development Training was conducted by Dr Josephine Saul-Maora and Robert Toula on 25-27 June at Alexishafen Catholic Church Convention Centre. Father George Tripa enthusiastically assisted the program. The main objectives were to, a) train CMFT couples in cocoa development and business as a family unit, and b) train the CMFT couples to train and assist their group members as role models in their communities. Training was attended by 8 CMFTs and their wives from Sumkar District (3 couples from Kurumlang, Keviak, Rempi Villages), Bogia District (2 couples from Amiten and Suaru Villages), Madang District (3 couples from Mabonob, Balama and Amele Villages) plus 8 observer farmers and wives. In addition to visits to Balama and Mabonob Family Cocoa Projects, the training program covered four modules;
 - Working as a family farm team for family goals
 - Planning your family farm as a family team
 - Feeding your family farm team
 - Decision making and communicating as a family team
- On 17 July staff visited Gohe/Gumaru, Transgogol LLG, Madang district, with a nursery of 3,000 rootstocks (over 300 budded); 10 farmers (2 women) trained on budding skills with 3 budders and 1 DAL officer engaged; BWG to be established from their own nursery clones. On 28 July, Usino sites were visited – Dumpu (1,000 clones ready for planting, and budwood garden established, 4 farmers, 1 woman, contacted); Korona (7 goats being well maintained, budwood garden mature, 3 farmers including one woman contacted); Nuku (1,000 plus clones ready for field planting, budwood garden needs infilling, 5 farmers including 2 women contacted). On 30 July, Bofeng led a team to the extension site at Amele to participate in the Family Teams Training for 20 farmer couple conducted by the farmer leader Jacob and his wife.
- Thirteen project sites (Mabonob, Balama, Rempi, Erima, Kaviak, Klumlang, Burag, Mangar, Gohe, Dumpu, Korona, Nuku and Amele) entailing 17 field visits covering 7 LLGs and 4 Districts, 145 farmers (64 women) were made in July. Overall, 14 nurseries with seedlings capacity varying from 1,000-5,000 are being maintained and 9 were visited in July (more than 1,000 rootstocks were budded at each of 3 CMFT nurseries - Erima, Amele, Mabonob). 15 budwood gardens are being maintained in the province (7 mature for harvesting bud sticks - Balama, Tamane, Mabonob, Rempi, Kumisanger, Galeg and Korona). 29 farmers blocks visited and maintained this month. Two new sites (Burag and Magar on Karkar Island) are to be established, as well as Amele and Dumpu. Farmers were trained on quality cocoa processing at two sites (Balama and Mabonob, 10 farmers including 4 women participated). Two radio broadcasts were made on cocoa activities on NBC Radio Madang
- Problems encountered included high cost of fuel restricting frequency of field visits by ACIAR and DAL staff, 2 project vehicles requiring full service, lack of funds for supporting DAL district officers on field visits, lack of funds to pay CMFTs as planned, Cocoa Board inactive in establishing a central nursery.

New Ireland

- Regular visits to CMFTs and training on budding continued in New Ireland. Unfortunately, the goat distribution to Laraibina in New Ireland was delayed because of deaths of goats from UNRE so NAQIA have ordered medicines for goats to be drenched and vaccines before they are released. Our project continues to be the only source of funds for the extension activities of the REDS officer in New Ireland.

East and West Sepik

- Chris Sasingian, partner CMFT of Nola at our very successful site in Yekimbole was badly injured while trying to stop a fight between younger men in the village but is now recovering. This has delayed the ploughing to establish the field trial in collaboration with the ACIAR Soil Fertility Project. Trevor has overseen the installation of solar-powered fans in one of the solar dryers at Yekimbole and these have been able to operate for 6 hours at a time to assist drying.
- From 12 to 16 August, Josephine Saul-Maora and Robert Taula, assisted by Timothy Sam, conducted a Family Teams Training at the Hawain Training Centre (restored by John Meth with ACIAR project funds), East Sepik with 14 CMFT couples. The four training modules and activities were the same as for the Madang training (above). Participants were given brown paper to draw their current farms. The Seasonal Calendar was discussed and referred to in their manuals. Each participant was given paper to draw a plate with rainbow meal and the poor food value of much store-food was discussed, led by Francis Whan. Robert Taula presented the FAITH (Food Always In The Home) Garden and also talked about the FAITH Cupboard. Participants drew their own FAITH Gardens in their books. Unfortunately, participants demanded attendance money and the training was reduced in length. The attitude of requiring an allowance to attend training should stop, although a travel allowance may be required.
- A visit to East Sepik by Trevor, David Yinil, and Chris Fidelis was delayed because of the Cocoa Board internal review which was postponed until 29-30 August. The review was for staff in the Provinces and our coordinators in New Ireland, East Sepik and Madang attended.
- The K330 million European Union Agricultural Project for East and West Sepik was approved in August, and this will impact on our Project with a high demand for improved planting material. PPAP were also keen to buy seedlings from our CMFTs in East Sepik. A problem of reduced wet bean to dry bean recovery rates (from 33% to 27%) has been identified by Agmark who have asked the Cocoa Board to study the problem.
- Timothy Sam, project coordinator in Wewak, travelled with Wilson Miroi to Awareh Poro Block 137 to help prepare for a Field Day that will be sponsored by ACIAR on 5 September. On the way they visited a cluster group nursery and also visited the first cocoa block that has been prepared for the Aitape-Lumi Cocoa Project. Trevor and David Yinil travelled to Wewak and Aitape to attend the field day. Stations have been prepared at the site for demonstrating all phases of cocoa development from nursery, bud grafting, to block pegging, lining, field management, and post-harvest processing including fermentation, drying, and taste profiling. Invitation letters have been sent out to leaders in the community including Aitape Administration staff, and Aitape-Lumi District Development Authority CEO, Mr John Ainep, who will be guest speaker. Local MP, Patrick Pruaitch, is very supportive.

Highlands

- John Konam visited Karimui from 30 August, having to walk out for 3 days due to lack of flights from Karimui. The Cocoa Board continues to cut across his program and work with the Simbu Provincial Government and their officer in Karimui, John Komba, against him, disrupting the program. Other CMFTs (in 6 wards) and Karimui farmers complain that the provincial government (and Cocoa Board) favour one particular CMFT. In early August, George Curry met Matthew Joshua, who left Karimui in May after completing interviews with 60 farmers and entering the data on his laptop.
- John has drafted and submitted to John Moxon a Concept Note for PPAP to include Karimui Cocoa Development in a future PPAP/ World Bank project, and the Bank has included Simbu/Karamui in the new PACD project document.
- On the ground in Karimui, some clones are beginning to produce flowers and cherelles.
- IPDM training has been extended to all 27 wards in Karimui, although our initial commitment was only in wards 1 to 7. This is because all wards are planted with open pollinated hybrid cocoa seeds from the DPI Demonstration SG2 Hybrid gardens. Tony Yol Siperai (an IPDM certificate holder) and John Thomas conduct FFS/IPDM training in a more central location in every ward so that every cocoa farmer has an opportunity to attend. Seeds are still being planted into soil beds and germinated seedling planted into the field, removed the need for a nursery. Seedlings will be grafted in the field with proven clonal material.
- Every cocoa model farmer has planted a budwood garden of 180 clonal trees (i.e. 10 trees of each of the 18 latest release CCI clones planted in a single line/clone). The clones that we planted in all the seven model farmers' gardens are growing well, although some deaths have resulted from lack of management. Clones will be tipped and pruned when farmers are able to use the prunings to propagate more plants.
- Summarising some developments omitted from earlier reports, in March 2019, 12kg of open pollinated hybrid seeds from DPI's initial SG2 Test Block were supplied to EHP, SHP and WHP DPIs for test planting. In

April, 25 budsticks of cocoa were airfreighted to Goroka for use in budding training of EHP, WHP and SHP DPI staff by John Konam. A smartphone was supplied to John Thomas to allow effective communication with him in Karimui. John Thomas has shown that propagation of clones from stem cuttings is possible. In May 2019, John Thomas and Tony Yol made a 2-week patrol visit to wards 8 – 24 to identify potential CMFT sites for spread of clonal cocoa when PNG Government or World Bank funding becomes available. Between June and August, Karimui cocoa farmers built foot bridges to allow them to transport their produce to the airport and markets for freighting out of Karimui. Karimui farmers are now mobilising to form cocoa farmers group to move their produce to market.

Figures 8, 9 and 10 (all below): Measurement of cocoa clones by John Thomas in Karimui



Figure 8: Height



Figure 9: Stem girth



Figure 10: Branch spread

Sweetpotato

HORT/2014/097

- Two important commercial kaukau varieties, Rachael and Korowest, have been added to the *klin kaukau* collection at NARI Aiyura research station. Cleaning of varieties involves a series of steps to remove any pathogens including viruses from the plants, and rigorous testing of the material using molecular diagnostics and grafting to indicator plants to ensure they are clean. The material is being bulked up at Aiyura and will be released to farmers in the coming months.
- The first exports of kaukau from PNG to Singapore were reported in the PNG Post Courier <https://postcourier.com.pg/morobe-lead-first-kaukau-export/>. The planting material used for the crops were *klin kaukau*, demonstrating that the potential market for nursery growers of *klin kaukau* vines is strong.
- Project researcher Kirt Hainzer has commenced a PhD project where a community based participatory research (CBPR) approach will be used in the greenhouse communities to gauge community-wide perceptions of the intervention impacts. The CBPR approach is gaining a lot of traction within the development space, particularly in evaluations, as it identifies communities as experts and recognises the importance of involving members of a study population as active and equal participants. Ideally this research will empower and provide a voice to vulnerable communities and improve future engagement with communities – data collection will commence in September 2019.
- Chris Gard and Kirt Hainzer have developed a new training module for the project, *Understanding markets and the business plan* training. The training is now at a stage where we will discuss the plan with the National Training Board (NTB) for formal accreditation under the national standards, with a plan to roll out the training next year. This comes at an opportune time with the PNG government announcing an intention to allocate PGK200 million to small scale loans distributed through National Development Bank (NDB). We have developed a training which community development workers can use to assist smallholders to apply for loans through NDB.
- Cathy O'Mullan, Chris Bugajim and Kirt Hainzer have submitted an abstract for the PNG Impact Conference <https://www.cairnsinstitute.jcu.edu.au/dialogue/conferences/png-impact/> to be held in December 2019 in Port Moresby (co-hosted by the University of Papua New Guinea and James Cook University). This conference promotes dialogue on how research and research policy can best support an inclusive and

sustainable society and to showcase active research projects which are delivering significant societal benefit for PNG.

Teaching the farmers of the future

- In the first week of the July 2019 mid-semester school break, over 70 teachers from throughout New Ireland converged on Our Lady of the Sacred Heart International School (OLSH), Kavieng to improve their excellence in teaching. Teachers from 14 different primary and secondary schools from as far afield as Nasko, Namatani and Mussau as well as a large number of local schools attended the four day workshop.
- The programme, initiated by Dr Barbara Pamphilon and Dr Kym Simoncini from the University of Canberra and called “Teaching for PNG’s Future” was hosted by OLSH as part of the Governor’s School of Excellence Programme as a way of assisting teachers across the whole province to build their skills and hence improve student learning outcomes in the area of agriculture and family development.
- The focus of the workshop was to link essential skills as developed in the University of Canberra’s “Family Farm Teams Manual” such as functional numeracy, healthy lifestyles and nutrition, caring for country and sustainable futures, economic development and personal financial stability, to PNG curriculum and classroom activities.
- The positive response from schools and individual teachers to make the most of this opportunity and participate in the workshop was overwhelming. Teachers freely gave up their holidays and schools sourced travel and accommodation in order to attend. Special thanks to the OLSH principal, Jo Martin, and her amazing staff.
- The Family Farm Teams team is very happy to see how our work can be used by teachers - for the children who will be the PNG farmers of the future - we hope we can share this in other provinces too.



Galip Nut

- The Galip Nut project is currently going through a transition phase between the former project, jointly funded by DFAT and ACIAR as part of the TADEP, and the new project which is being funded by ACIAR.
- Prof Helen Wallace has changed institutions and now works at Griffith University.
- Sales of the products has remained strong and we are almost out of stock of galip nut products. The project team are currently waiting for the galip season to start while we finalise the new ACIAR project is finalised.

Recent papers accepted and published:

- Malmir, M., Tahmasbian, I., Xu, Z., Farrar, M.B. and Bai, S.H., 2019. Prediction of soil macro-and micro-elements in sieved and ground air-dried soils using laboratory-based hyperspectral imaging technique. *Geoderma*, 340, 70-80.
- Malmir, M., Tahmasbian, I., Xu, Z., Farrar, M.B. and Bai, S.H., 2019. Prediction of macronutrients in plant leaves using chemometric analysis and wavelength selection. *Journal of Soils and Sediments*, 1-11.