



Inclusive agriculture sector policies help smallholder farmers link to competitive markets

Ready access to land, labour and credit are the basic resources necessary for farming. And choosing the right type of farming is dependent on how land can be accessed, what labour is available (family or hire), and what assets the farmer has to obtain credit. Government services through research and extension and the development of long-term agriculture sector strategies are conditions necessary for private-sector led agricultural growth.

In the Pacific up to 80% of Pacific Island populations depend directly or indirectly on the agricultural sector as their major source of livelihood, and for food and social security. However, agricultural productivity across the region has stagnated or declined over the past 40 years. A major threat faced by Pacific Islands is their growing dependence on imported food, as a result of the limited capacity of their smallholder agricultural sector to supply and satisfy the needs of the domestic market. The challenge to policy-makers and the agricultural sector stakeholders, therefore, is to obtain greater food security for the region by encouraging the large proportion



Samoa Minister of Agriculture and Fisheries, Hon Le Mamea Ropati, viewing a display at the Ba agriculture show. The Hon. Minister was on an official visit to Fiji for discussions on livestock issues.

of semi-commercial farmers to move into commercial production through sustained access to competitive markets. Improvement of domestic market infrastructure, local value-added processing, and development of regional markets for a diversity of Pacific crops would build on and support the desirable aspects of traditional farming systems.

The European Union and the Secretariat of the Pacific Community are working together through an intra-ACP Agriculture Policy Program, a program encompassing the Pacific and Caribbean regions to address the development needs of the commercial and smallholder farmers in the Pacific region by assisting them to adopt new technologies, build on traditional knowledge, strengthen linkages to markets and provide clear supportive policy frameworks. Up to EUR 8 million has been allocated by the European Union for the Pacific component. The Pacific Agriculture Policy Project (PAPP) commenced in June this year and will run to 2017. The

project agreement was signed in March 2013 and the project became operational in June 2014 with a full complement of staff and resources. PAPP will assist with building farmer livelihoods through three approaches; promoting evidence based policy frameworks, strengthening communication and information knowledge management and stronger linkages to markets. Availability of agricultural statistics is a major constraint to development of sector policies and strategies to facilitate private-sector led agricultural growth PAPP will work with countries, development agencies and other stakeholders to improve country capacity to gather and utilise data and statistics to better inform agricultural policy and investment.

The project will continue for 48 months and will operate in the 15 Pacific members of the African, Caribbean and Pacific Group of States (ACP), including Timor Leste. CTA, the Technical Centre



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LRD's core business is to improve the food and nutritional security of the Pacific Community through the sustainable management and development of land, agriculture and forestry resources. This is accomplished through the delivery of technical support, training and advice to our member country governments in the areas of plant protection, conservation and use of plant genetic resources, animal health and production, agroforestry, sustainable systems for agriculture, forestry and land management, and biosecurity and trade facilitation.

For feedback, comments and contributions, please contact: EmilA@spc.int, or the LRD helpdesk, Irdhelpdesk@spc.int.

SPC Land Resources Division
Private Mail Bag, Suva, Fiji Islands
Telephone: (679) 337 0733
Fax: (679) 337 0021
Visit our website: www.spc.int/Ird

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for Rural and Agricultural Development, will coordinate inter-regional exchanges with the Caribbean. The Food and Agriculture Organization of the United Nations (FAO) is a collaborating partner.

PAPP Team Leader Vili Canigo said, 'The Pacific Agriculture Policy Project underscores the importance of agricultural livelihoods in our region and the fact that farmers are very much in the driving seat for securing growth in this important sector. Our collective challenge across the region is to ensure that farmers are well supported and that the agriculture/forestry sector is strongly positioned to contribute to national development outcomes such as health and education. Stronger, coherent and evidence-based policies that promote research, markets and broader outcomes such as health will go a long way in helping countries promote farmer interests, advocate at the national policy level and better position the sector to seek increased domestic or international investment.'

In October 2014, PAPP facilitated a new two year partnership worth USD207,000 (FJD400,000) between SPC and the Pacific Island Farmer Organisation (PIFON) that promoted collaboration in three important areas; Advocacy and Information Outreach, Promotion of Sustainable Production Practices and Capacity Building. Key areas of work over the next 12-24 months include:

- Supporting regional exchanges of expertise between farmer organisations and private sector partners;
- Collaboration with Pacific country extension services, national farmer organisations and organic producers on promoting sustainable agricultural practices.
- Strengthening the sustainability of national farmer organisations;
- Establishing a help desk for questions on commercial agriculture;
- Supporting representation of members at important regional and international forums.

The project will assist farmer associations to develop closer working relationships with the private sector, by improving their extension and marketing capacity and the project will work with existing professional development networks to ensure smallholder farmers and their representatives are included in national and regional consultations. PAPP will develop an integrated knowledge management and communications strategy to efficiently deliver services to farmer groups and with the use of ICTs to help collate data from national agricultural systems to better formulate sector policies.

Contact for more information: PAPP Team Leader, Vili Caniogo (ViliC@spc.int)



In the Pacific up to 80% of Pacific Island populations depend directly or indirectly on the agricultural sector as their major source of livelihood, and for food and social security.



Farmers in Labasa met to learn techniques on raising vegetable seedlings and nursery management as part of efforts by the EU-IKSA project to supplement farmer incomes whilst waiting for sugarcane to harvest.

Horticultural cash crops supplement incomes of sugarcane farmers

Sugarcane farming in Fiji is mainly undertaken by smallholder family farms, with labour at most times supplied by family members and hired at peak times for planting and harvesting. However sugarcane farming is also becoming very challenging economically, with farmers realising only marginal profits. Given the challenges, sugarcane farmers in Fiji are turning to intensive farming practices to supplement incomes. Farmers are intercropping sugarcane with high-value cash crops such as vegetables and legumes, which allows them to realise extra income. The European Union-funded Improvement of Key Services to Agriculture (IKSA) project is working with sugarcane farmers and other farmers to supplement their income through growing fruit and vegetable crops on unused or marginal land and through intercropping with cane.

Implemented by the Secretariat of the Pacific Community (SPC) through its Land Resources Division,

the project assists farmers with training and resources in seed and seedling production of viable horticultural crops selected for their production viability and market demand.

EU-IKSA in collaboration with Fiji Ministry of Agriculture organised two farmer training workshops in Labasa (2-3 July, 2014), on nursery management and pineapple farming. The nursery management workshop was conducted at the farm of Ms Shakuntala Devi of Wailevu, Labasa. Ms Shakuntala has been farming sugarcane for over 15 years. But production costs have been getting too high, and hired labour has been hard to come by. Ms Shakuntala took an interest in vegetable production following a previous training workshop organised by the IKSA project. She still maintains her 10-acre sugarcane farm, but her income is now supplemented through vegetable farming and selling vegetable seedlings, fruit trees and herbs to surrounding farms from a small nursery operation

she started. She is also keen to raise sheep and goats on her farm.

The one-day nursery management training was attended by over 50 farmers, including 15 women and 20 youths, and was conducted by veteran horticulturists Sant Kumar. Ms Shakuntala 20-acre farm is on hilly land typical of the landscape in this area. Some participants are new to farming while others are sugarcane farmers keen to learn other farming enterprises.

The nursery management and vegetable seedling training was organised by IKSA Technical Field Officer Mitieli Duvuloco. Mitieli looks after the Labasa farmers and others in Mucuata Province for the IKSA project. He says that 7 tikinas (landowning units) out of 12 in Mucuata Province are in the sugarcane belt. Potentially, 300 farmers stand to benefit from the IKSA project.

Pio Tikoisuva, IKSA Technical Officer based in the Lautoka office, helped in organising the farmer train-

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Farmers learning how to 'cook' soil to sterilise for use to raise seedlings, a procedure to kill pests in nursery management.

ing. Mr Tikoisuva previously organised similar farmer training in Lautoka and Ba on vegetable nursery management.

Sandip Chand, Agricultural Assistant for the Ministry of Agriculture for Macuata Province, works closely with the IKSA project. Mr Chand said that his extension area covers some 3,000 farmers who mainly grow three crops – sugarcane, rice and kava. The growing season for rice is November to April. He advises farmers to practise crop rotation to maintain soil fertility and to break pest incidences from continuous growing of one crop, especially incorporating legumes to improve soil nitrogen.

Mr Kumar conducted a very lively exchange and show and tell with the farmers sharing knowledge on different varieties of cash crops, market demand for various crops, planting times, and availability of inputs such as seeds and fertilisers. At present, local tomatoes are selling at FJD 11/kilo at the farm gate, and eggplant is selling at FJD 1.50 a kilo. These are very good prices, said Mr Kumar. He aims to start a revolution of smallholder nurseries supplying seedlings for commercial vegetable production. He says that there are not enough vegetables to meet the demand. Different types of nursery designs were shown, and discussion covered affordability, access to water, and common pests and diseases found in a nursery environment. Farmers learned how to 'cook' soil to sterilise it using an open 44-gallon drum to prevent seedlings

from being harmed by soil pathogens, nematodes, pests and weeds. The farmers showed very keen interest in raising seedlings, with some enthusiasts already making plans to start their own small nurseries.

On the second day, the farmer training focused on pineapple production and was held at Tuivadra farm in Nakama, Labasa. Long time pineapple farmer A. van Santen coordinated this



Longtime pineapple farmer A. van Santen showing farmers aspects of pineapple production, where he pointed out that pineapple is light sensitive, and daylength affects flowering.

training on production aspects and spoke of his experience managing his own successful pineapple farm. He said that pineapple is a light sensitive crop and day length affects flowering. He discussed off-season production and the practice called 'forcing' fruit production using chemicals such as Ethrel in a mixture with urea fertiliser. Discussion also focused on which plant food to use for optimum plant growth and the role the major elements nitrogen, phosphorous and potassium, which are supplied to the soil from chemical fertilisers or manure, have in plant growth. According to Mr van Santen, plant growth and production is limited by the least available nutritional element in the soil, an effect known as the 'law of minimum.' Thus, crop yields are often limited by a minimum availability of nutrients, and once this limitation is removed, production increases until the next nutrient limitation occurs.

Farmers spent the afternoon learning about pineapple farming at the 10-acre farm of local villager Samu Isoa. The pineapple farm is very well maintained, and Samu is very proud of his achievement. It is very hard work to maintain the large pineapple farm and is testimony for this 50 year old farmer. He had help from some members of his family. He sells his pineapples to supermarkets in major towns and Suva markets.

He explained that pineapples are ready for the first harvest in 18–24 months after planting, and a second harvest of the ratoon crop can be performed in another 12 months. For efficiency it is best practice not to go beyond the second ratoon crop. All pineapples produced, said Mr van Santen, go to meet local demand, but local demand outstrips supply. Mr van Santen said that pineapple farming requires continuous care from the farmer, and he noted that as pineapple is a slow-growing crop weeds are a major problem that can destroy the crop. He said that farmers need to have weed control in place throughout the growing season.

Contact for more information: Waisiki N Gonemaituba (WaisikiG@spc.int)



A way forward for the Regional Biosecurity Plan for Micronesia and Hawaii (RBP) was finalised at a meeting held at the University of Guam with over 65 regional and international participants attending. The implementation strategy is now finalised.

A regional approach to biosecurity for Micronesia and Hawaii

A strengthened national biosecurity service is the best defence against invasive alien species which impact negatively on agrobiodiversity, and strengthening biosecurity requires the participation of all relevant stakeholders to develop preventative measures and strategies. This was the underlying theme of a workshop held recently at the University of Guam (UoG) where approximately 65 regional and international participants gathered for three days (19-21 May 2014) tasked to review and discuss the Draft Regional Biosecurity Plan for Micronesia and Hawaii (RBP), which has been under development for the past few years.

For the islands of the Pacific region, a stable and sustainable economy is dependent upon a healthy natural resource base. Efforts to enhance food security, develop opportunities for economic prosperity and protect unique cultures, natural environments and biodiversity are increasingly and fundamentally impacted by a wide

range of invasive plants, animals and disease organisms. Invasive species threaten Pacific way of life degrading oceans, destroy crops, smother reefs and forests, kill unique endemic species, and impact on traditional practices, cultures and health of Pacific people. Aside from climate change, invasive species are the single greatest long-term threat to Pacific Island economies, environments, cultures, people and sustainable livelihoods. Invasive species undermine ecosystem resilience and our ability to adapt to climate change and develop sustainably.

The Secretariat of the Pacific Community (SPC) and UoG facilitated the workshop, bringing in key stakeholders from jurisdictions throughout Micronesia and Hawaii to review the draft implementation strategy. More specifically the delegates discussed the implementation strategy and the biosecurity recommendations within the RBP. The workshop provided a forum for jurisdictions and development partners to have

a final joint working session to comment on and conclude the updating of the implementation component of the RBP before finalising the document to go to island leaders' forums to be held in the coming months.

Dr Cokanasiga, Deputy-Director, SPC Land Resources Division, in his opening remarks, said the SPC is a critical partner with University of Guam (UoG) on the RBP work. "The development of the implementation strategy involved extensive consultation with leaders and invasive species experts from throughout the region," said Dr Cokanasiga. He highlighted the partnership with SPC to address invasive species impacting on biodiversity as equally as significant as the global issues food security and climate change. Dr. Ken Cokanasiga spoke on behalf of SPC pointing out the mandate of SPC to provide technical assistance to Pacific island countries and territories to improve their livelihoods. He said the role

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of SPC on sustainable development is to bring resources and technical advice to assist member countries to improve their well being.

President of the University of Guam, Dr. Underwood welcomed participants to UoG pointing out the coconut rhinoceros beetle incursion into Guam as an example of the march of invasive species across the Pacific islands devastating a major tree crop, the tree of life which sustains livelihoods for food security and income generation. The brown tree snake and little fire ant are two other invasive species' causing problems to Guam's biodiversity.

SPC Biosecurity Adviser, Josua Wainiqolo is the main SPC contact in the development of the RBP with partners in the northern territories. He said the biosecurity plan is now ready for fine tuning. "The RBP was developed by the region and for the region and the time is now approaching when the jurisdictions will be able to make this plan part of their policy and move forward with implementation of the various recommendations found within the implementation strategy.

"The onus is now on the various jurisdictions to comment on the accuracy of the recommendations of the biosecurity plan before it is finalised and prepared for presentation to various regional forums such as the Micronesian Chief Executives meeting in June and the Pacific Islands Forum meeting in August. Funding for the implementation of the biosecurity plan hinges on tangible outcomes that donors see as benefiting island biodiversity," said Mr. Wainiqolo.

SPC facilitated the participation of Land Care New Zealand, Palau, Federated States of Micronesia, Republic of Marshall Islands, Commonwealth of Northern Mariana Islands, Hawaii and Guam to the consultation.

James Stanford, the phase II RBP Project Director with the University of Guam, said the main aim of RBP is reduce the threats associated with invasive species to the region by improving biosecurity for each of the jurisdictions as well as for the region. According to James, "The RBP evaluates invasive species risks to marine, terrestrial and freshwater ecosystems in Micronesia and Hawaii (in regard to its linkages with Micronesia) and makes recommendations to remove or mini-

mise and manage these risks."

The development of the RBP brought together U.S. Department of Defence (DoD) and other agencies of the U.S. federal government, and the governments of Guam, the Northern Mariana Islands, Hawaii, Palau, the Federated States of Micronesia (including the state governments of Yap, Chuuk, Kosrae, and Pohnpei), and the Marshall Islands.

Developed with over US \$3.7 million of direct funding from the DoD and many hundreds of thousands of dollars of in-kind support from the governments and non-governmental groups and organisations of the region, the RBP represents an unprecedented collaborative effort to enhance prevention and to minimise invasive species threats and impacts.

At the end of the consultation, the working group acknowledged that the broad over-reaching goals of the RBP are to ensure that each jurisdiction has appropriate biosecurity legislation (as well as laws, policies, regulations, and operational procedures), that jurisdictions develop appropriate and sustainable biosecurity funding to include mechanisms such as cost-recovery, that jurisdictions have appropriate levels of community engagement that is to be accomplished through concerted IAS awareness programs, to improve communication and cooperation throughout the region using a cohesive multi-tiered mechanism to include jurisdictional, national and region

structures, and to improve biosecurity for terrestrial, freshwater, and marine systems within the jurisdictions and across the region.

The establishment of a regional coordinating body to move forward and further develop the RBP attracted much discussion with a few options suggested. Invasive species and biosecurity are now high on the agenda at global forums and establishment of a regional coordinating body is the commitment needed in order to move forward regional in efforts to address biosecurity and reduce the potential impacts from invasive species. As an interim solution, SPC has offered to facilitate regional biosecurity coordination until such a time when and if another mechanism is approved and developed. The working group supports this interim solution.

Funding for the biosecurity plan was discussed at length with the presence of international agency UNDP earmarking funds for sustainable development initiatives on biodiversity through the Global Environment Fund (GEF). UNDP works to halt human inequality by protecting national resource base.

Contact for more information: Josua Wainiqolo (JosuaW@spc.int); James Stanford (University of Guam) (jsecology@gmail.com; 671-787-1208), or LRD Helpdesk (lrhelpdesk@spc.int).



The main aim of RBP is to reduce the threats associated with invasive species to the region by improving biosecurity for each of the jurisdictions as well as for the region.



Research to find ways to improve soil health, such as growing living fertiliser mucuna started in 2011 with collaborating partners Fiji Ministry of Agriculture, ACIAR and SPC.

SPC collaborates with ACIAR to improve soil health

Scientific research continues on the island of Taveuni, Fiji, to find ways for farmers to improve soil health to support the FJD 20 million taro export industry, with 80% of the tausala taro variety exported by Fiji produced on Taveuni. The research to improve soil health started in 2011 as part of a project implemented by the Secretariat of the Pacific Community (SPC) in collaboration with the Australian Centre for International Agricultural Research (ACIAR), and Fiji Ministry of Agriculture Taveuni research and extension staff. Technical assistance is provided by Queensland Department of Agriculture, Fisheries and Forestry. The soil health improvement project is also implemented in Samoa and Kiribati. Taveuni soils have been depleted and thus lack the diverse nutrient resources to adequately support intensive farming, especially the taro industry.

The research project was developed to address this problem. The goal is to identify and recommend to farmers best agronomic practices to maintain healthy soils for good crop yields. The common understanding is that if you keep the soil healthy by increasing the availability of nutrients, the soil will support robust crop growth and keep levels of pests and diseases low.

The SPC team consisting of Dr Siua Halavatau, Fereti Atua and Takaniko Ruabete of the Land Resources Division is working with stakeholders TeiTei Taveuni farmers and Fiji MPI to look

at soil improvement practices on taro farms. These soil improvement treatments include addition of fish manure, rock phosphate, biobrew, biochar, urea, NPK (13:13:21) fertiliser, and mucuna ground cover. The treatments were also tested against farmers' present practices, which differed at each site.

The TeiTei Taveuni farm sites on which the research on the soil improvement treatments were carried out spanned the three zones of the island: north, central and southern. At harvest, data were recorded from selected parameters including soil chemistry, soil biology, soil physics, entomology, pathology, and economics. As expected, data collected differed across farm sites. Data were also collected on corm length, width and weight, as well as percentages of rejects.

Soil samples were taken at the different sites for nematode counts. Plant nutrient analysis was used to gauge levels of nutrients present in the plant (using the specific leaf area as an indicator) and to give an indication of whether there are sufficient nutrients to sustain growth to crop maturity. Research results in 2012 found that using fish manure and rock phosphate worked best overall, with the recommended NPK application working slightly less well. The trials were repeated in 2013 comparing these two best bets and adding a third treatment – farmer's practice (which differed for each site). In the 2013 trials, the three treatments were applied with or without biochar and with or without mucuna. Management of trial plots including weed control is the responsibility of each farmer.

The SPC team with agricultural stakeholders in Taveuni have harvested the second round of trials and collected data to confirm the recommended practices from the earlier trials. Thus far, the research points strongly to the practice of adding fish manure and rock phosphate as producing consistently good yields as compared to the other treatments. Variations were observed with the variables biobrew, mucuna and biochar.

The SPC/ACIAR soil health research is undertaken in tandem with the Australian Aid Program's taro rehabilitation project and the Food and Agriculture Organization of the United Nations (FAO) Technical Cooperation Programme's mucuna trials, with technical assistance from the plant health specialists of the SPC Land Resources Division. The trials are carried out at Taveuni Research and Development Centre.

Contact for more information:
Dr Siua Halavatau (Siosiuah@pc.int), or
lrhelpdesk@spc.int.



Soil health trials are carried out on Taveuni Island where 80% of export taro is grown.



The taller ventilated structures will help trellis crops such as tomato to higher levels thus increasing production with more harvests throughout the season.

Protective greenhouse structures to increase volume and quality of vegetables

Fijian and Samoan vegetable farmers keen to increase the volume and quality of their high-value vegetable crops now have access to five specially-designed protective greenhouse structures with improved ventilation. This is the product of a collaborative effort between SPC and partner ACIAR through PARDI funded research and considerable local industry and business support.

The structures have been established as research, demonstration and commercial sites, where farmers and researchers can learn about improved cropping systems to supply high-value vegetables year-round to domestic and potential export markets in the Pacific region.

The ACIAR-funded PARDI protective cropping project ‘Developing protected cropping systems for production of high-value vegetables in the South Pacific Islands (Fiji and Samoa) and Australia’, and ACIAR project ‘Strengthening integrated crop management research in the Pacific Islands in support of sustainable intensification of high-value crop production,’ co-funded

the structures and are targeting the need for improved crop protection in the region.

Five structures, each covering a ground area of 360 m², have been assembled in locations with distinct environmental conditions in Fiji (Sigatoka, Koronivia, and Tavua) and Samoa (Nu’u and Tapatapao).

PARDI Project Leader, Dr Elio Jovicich from the Queensland Department of Agriculture, Fisheries and Forestry (DAFF), said PARDI supply chain analyses and surveys and advice from collaborating farmers pinpointed the highest demand/high-value crops among buyers and consumers.

“These crops: tomato, capsicum and cucumber, will be the subject of the first round of trials,” said Dr Jovicich.

“Local farmers and representatives from several South Pacific research institutions are eager to start trial crops and are excited about the considerable benefits the structures offer.”

The new greenhouse design includes high roofs (up to 4.5 m), roof vents, shade screens and insect-exclusion netting. The greenhouse structures use only passive ventilation for cooling (no

electric fans) and can create an improved crop environment with respect to outdoor growing conditions and compared to the low-roof, walk-in tunnel designs.

Walk-in tunnel designs are already used by some farmers and usually have roofs that are less than three metres high, no roof vents, and small open areas for lateral ventilation. Temperatures under these structures frequently reach levels that are higher than optimal for plant growth and fruit setting in vertically trellised crops such as tomatoes, capsicums, and cucumbers.

The purpose of using taller and better ventilated structures, such as the ones designed for the PARDI project, is to demonstrate that crops can be trellised to higher levels, and thus, production can be increased with more harvests throughout the season. This environment is also better for short, leafy vegetable crops. In addition to providing improved growing conditions, the structures are designed to be disassembled when extreme weather conditions, i.e. cyclones, are forecasted.

Farmer training is an important part of the project given the production system is new to the region.

“PARDI and ACIAR will train farmers in new irrigation technologies (e.g. drip), and different plant growing practices (e.g. trellising and pruning). We also aim to manage pest and diseases with low pesticide use and will collaborate with ACIAR to monitor and manage pest and diseases during the trials.”

As well as PARDI/ACIAR funding, several local commercial companies are backing the research. Wah Sing Yee, Director of importers Marco Polo International Ltd, has helped to import the structures and is supporting Fiji Ministry of Agriculture to import additional structures and irrigation components. Edwin Tamasese, a farmer and Director of Soil Health Pacific Ltd, has set-up the two structures, and is assisting with the importation of seeds and irrigation components in Samoa. Mr Tamasese and Mr. Munsami Naiker, farmer and Director of All Season Nursery in Tavua, will assist with the production of seedlings for the trials.

For more information:

PARDI communications

Julie Lloyd, M: +61 (0)415 799 890

Protective cropping project leader

Dr Elio Jovicich, M: +61 (0)488 770 925

Links for further information:

PARDI: www.spc.int/lrd (go to ‘Focus Areas’)

ACIAR: www.aciar.gov.au

Strengthening institutional collaboration for resilient communities

People in Pacific Island countries and territories are increasingly relying on imported foods in their daily diets, with this change amounting to a marked diversion from their traditional diets. This trend poses a national food security risk, with countries dependent on outside sources of food. The issue of food security is further complicated by climate change, with increasing weather variability and impending climate change impacts having negative impact on the remaining local production of food.

Floods and other meteorological disasters can significantly impact food production in the Pacific, and their effects on food security can be compounded by the impact of disasters on transport and energy. Therefore, it is prudent to have functional, working partnerships in place to develop strategies and provide new products and services aimed to buffer communities and farmers from potential economic losses.

A national forum supported by the Secretariat of the Pacific Community (SPC) and held in Honiara, Solomon Islands, recently brought together part-

ners tasked to strengthen institutional linkages amongst actors with mandates in the areas of food security and meteorology services. The two principal actors are the Solomon Islands Meteorological Service and the Ministry of Agriculture and Livestock, with support provided by the Climate Change Division of the Ministry of Environment, Climate Change, and Meteorology and Disaster Management.

The 'Partner's Workshop' was held 15–17 July 2014, hosted by the Strongmen Waka Lo Community fo Kaikai. Officers from agriculture and meteorology services, including provincial officers, participated in the national consultation. The workshop examined the ability of Solomon Islands Meteorological Service to use forecasting tools to predict weather and climate variations and tested the ability of those working to address food security to provide appropriate responses given a sufficient lead time. The output is the identification of new products and services aimed to help local communities better respond to economic losses as a consequence of weather extremes. Relevant issues related to low productivity in the

agriculture sector were also examined, including the need for extension and advisory services, training to build capacity, communications and awareness raising.

SPC, through its Land Resources Division, was invited to provide technical support and expertise in food security and climate change and was represented by Dean Solofa (Climate Change Officer) and Maclean Vaqalo (Plant Entomologist). Both facilitated discussion groups on climate change impacts and challenges on food security.

Mr Solofa spoke about food security perspectives and challenges in the Pacific region today, whilst Mr Vaqalo provided an overview of current SPC climate change activities. The working groups identified gaps in knowledge on meteorology services, noting that this knowledge is closely linked to agriculture; the group also looked at potential areas where the two sectors complement each other to form a stronger front to address extremes in weather patterns. A lot of information was gathered from the working groups and this will be fed into the work activities of SPC for appropriate action, and in partnership with counterparts in the Ministry of Agriculture and Livestock.

Contact for more information: Dean Solofa (DeanS@pc.int), or lrdhelpdesk@spc.int.



Partners Workshop, Honiara: Weather extremes compounded by impending impacts of climate change will have a negative impact on local food production, it is therefore prudent to have functional, working partnerships in place to develop strategies and provide new products and services aimed to buffer communities and farmers from potential economic losses



Cocowood Veneer peeled during the trial run of the lathe.

Utilising senile coconut palm stems in the Pacific

Almost the entire literature written on coconuts declares it as the “tree-of-life” and rightly so, since almost every part of this amazing palm can be used, from the nuts, fronds, stems to the roots.

However, coconut in the Pacific, over the years, has declined significantly in its economic importance because of a number of factors, including a reduction in productivity of the palms due to the senility of a large part of the crop. Work on finding an economic value for the senile palms and to offer farmers sufficient incentive to clear and replant their coconut palms is continuing.

A current collaborative research project, funded by the Australian Centre for International Agricultural Research (ACIAR) and led by the University of Tasmania, Australia (UTAS), with supporting partners; the Queensland Department of Agriculture, Fisheries and Forestry, Australia (QDAFF), the Secretariat of the Pacific Community (SPC) and the forestry agencies of Fiji, Samoa and the Solomon Islands, aims for the “Development of advanced veneer and other products from coconut wood to enhance livelihoods in the Pacific”. This research is primarily focusing on peeling senile coconut stems into quality veneer sheets that can have high appearance and structural market value to help utilise the old palms in the Pacific.

The lathe machine and associated equipment for the coco-veneer trials have been installed and commissioned at the Timber Utilisation Division, Nasinu, Fiji (TUD), coinciding with the annual coco-veneer project meeting which was held in Narere, Fiji, from 18-21 August 2014. The opportunity was also used to conduct some training for the TUD staff on the opera-

tions and maintenance of the peeling facility.

Mr Tony Bartlett, the ACIAR Forestry Research Program Manager, says that this facility can provide landowners with a way to sell/use their senile coconut palms and can help upgrade the agricultural sector in making sensible land changes. Also, many people love coconut wood products because of the wood’s unique grain finish, and so the market for this product is available.

The training involved the staff at the Timber Utilisation Division, Suva, Fiji; a participant from the Ministry of Natural Resources and Environment, Samoa; and staff from the Secretariat of the Pacific Community under the teachings and guidance of the trainers from QDAFF.

The veneer produced in this training will be shipped over to the QDAFF Salisbury Research Station, Brisbane for further research and analysis including the veneer’s gluing and panel making characteristics. A second training followed by more elaborate peeling studies are scheduled before the end of this year.

For more information, please contact: Sairusi Bulai, Deputy-Director Land Resources Division (SairusiB@spc.int); Moana Masau, Cocowood Veneer Technician (MoanaM@spc.int) or LRD Helpdesk (lrldhelpdesk@spc.int).



Eric Littee of QDAFF explains the use of the veneer thickness gauge to the staff of TUD.

SPC enhances scientific knowledge of Pacific islanders

Two Pacific Island government staff members undertook attachments at the Secretariat of the Pacific Community (SPC) Land Resources Division in Suva, to improve their scientific knowledge on biosecurity issues and tissue culture techniques. The trainees, from Vanuatu and Tuvalu, spent time at SPC's Centre for Pacific Crops and Trees (CePaCT) and its Biosecurity and Trade Support (BATS) team.

Merriam Seth Toalak, Acting Director for Biosecurity Vanuatu, undertook a five-month attachment as part of the requirements of the 2013 leadership and professional development placement under the Greg Urwin Award scholarship from September 2013 to February 2014.

Ms Toalak spent three months with the BATS team on the Biosecurity Information Facility (BIF) system. The BIF system has four components: (i) biosecurity legislation, (ii) biosecurity manual, (iii) biosecurity database, and (iv) biosecurity website. The operations manual, database and websites all link to the biosecurity legislation, which is in progress in Vanuatu.

Biosecurity Vanuatu underwent restructuring in 2012; hence there is a need to revisit and complete work on the country's BIF. Consequently, this was the focus of the leadership attachment with BATS. The development of the BIF operational manual began from the online regional model with reference to the national quarantine manual.

The same applies for the BIF database and website.

At CePaCT, Merriam gained hands-on experience with tissue culture techniques and virus indexing, including practical indexing using molecular diagnosis and other diagnostic techniques on known plant viruses. Using polymerase chain reactions, she tested taro plantlets for the presence of taro viruses such as taro badnavirus. She also tested for cucumber mosaic virus on kava. Use of these methodologies complemented her biosecurity work, especially the transfer of crop varieties across international borders.

According to Ms Toalak, 'Being placed with CePaCT with the aim of understanding the concept and skills involved in molecular and serological diagnosis, is an excellent way of translating many of the theoretical concepts studied at university into a "real-world" scenario.'

The European Union-funded SPC Global Climate Change Alliance: Pacific Small Islands States (GCCA: PSIS) project supported the second trainee, Epu Falenga, from the Department of Environment in Tuvalu, who spent two weeks at SPC CePaCT in February 2014. The GCCA: PSIS project in Tuvalu is trialling integrated agro-forestry systems. The project involves growing 'climate-resilient' crops under the existing coconut trees, thereby maximising the land available for agriculture and building resilience to climate change.



Merriam Seth Toalak, acting director of Biosecurity Vanuatu, learned skills on virus indexing at CePaCT.

One aspect of the project in Tuvalu is research into the effectiveness of the climate-resilient crops produced by SPC CePaCT. These crop varieties can tolerate salinity, high rainfall and temperature extremes, making them able to withstand the projected impacts of climate change. They have performed well in other atoll countries, with the overall goal being to improve crop production and food security for small Pacific atoll nations.

Mr Falenga commented, 'We are trying to encourage households on the island to intercrop between coconut trees. The training has helped me understand and promote agroforestry at home, and CePaCT's valuable contribution to enhancing food security in the Pacific region.' He said that he was impressed with the vision and dedication of CePaCT toward conserving, developing and distributing improved varieties of crops. Swamp taro, a traditional staple crop of Tuvalu is also conserved at CePaCT.

The training provided by the CePaCT team was led by Amit Sukal, Plant Virus Diagnostic Officer (virus indexing) and Logotonu M. Waqainabete, Curator (tissue culturing).

CePaCT continues to respond to requests for attachments under various country projects to support human resource capacity development and technology transfer for agricultural improvement.

Contact for more information: Valerie S Tuia, CePaCT manager, ValerieT@spc.int.



Epu Falenga of Tuvalu is doing research on crop varieties tolerant to salinity.



Sugarcane farmers attended workshops to learn skills and knowledge in the production of cash crops. The farmer workshops were held at private nurseries in Nadi, Lautoka and Ba.

SPC-European Union project supplements income for sugarcane farmers

Integrating cash cropping into sugarcane farming is offering an alternative income source for farmers in the sugarcane belt region of Fiji. High value short term crops mainly vegetables and legumes as part of the farming system have allowed farmers to earn extra cash in the interim before the sugarcane is ready to harvest.

The Secretariat of the Pacific Community (SPC) – European Union Improvement of Key Services to Agriculture (IKSA) project is helping sugarcane farmers with resources to allow them to diversify into cash cropping targeting previously unused land mainly parcels of land too wet or too dry to farm. Cash cropping is a lucrative enterprise supplying vegetables to the local and overseas markets.

To equip farmers with the knowledge and skills in the production of cash crops the European Union IKSA project field officers, Pio Tikiosuva and Timote Waqainibete organised a series of one-day farmer training workshops (4-6 June 2014) on raising vegetable seedlings and nursery management. The farmer workshops were held at private nurseries in Nadi, (Nawai Sangam), Lautoka (Prakash Nursery), and Ba Nursery (Rarawai Rd).

Mr Tikiosuva said their ultimate goal is to assist growers in the sugarcane areas to improve livelihoods by

supplementing their incomes through the production for sale of horticultural crops.

Farmers are now intercropping and planting as cover crops the legumes cow pea and long bean, water melon, and okra, said Mr Waqainibete. “The training has inspired confidence and motivation in farmers. The workshops were a great opportunity to strengthen coordination, implementation and monitoring and evaluation of farmer skills in sustainable seedling production.”

Mr Sant Kumar of Bula Agro Enterprises led the nursery management training, assisted by Ms Aloesi Hicks of the SPC- Asian Vegetable Research Development Centre project, and staff of Fiji Ministry of Agriculture. The Nadi workshop covered the Sigatoka – Nadi communities, 52 farmers attended (47 men and 5 women). In the Lautoka training, 34 men and 5 women attended; similar numbers attended the Ba workshop comprising of farmers from Tavua to Rakiraki.

Mr Kumar said he was pleased with the interest shown by farmers and their willingness to train others on knowledge and skills in seedling production. The long term goal is to improve farmers’ access to a sustainable supply of vegetable seedlings, said Mr Kumar. The workshop taught proper

nursery management skills to effectively improve production and consistency of supply of seedlings to help farmers meet local and export markets.

Mobin Khan of Marintawa, Ba, one of the workshop participants is supplementing his income by going into vegetable farming after receiving assistance from the European Union IKSA project. The assistance helped with irrigation as he faced water problems especially in the dry season. The farmer is now able to have consistent supply of produce to the market. Additionally, the project has set up an agroforestry system on slopy land allowing pineapple cultivation intercrop with fruit tree crops. Mr Khan acknowledges the support of the European Union IKSA project.

Another farmer who has benefitted from the IKSA project is the President of Barotu Valley Farmer’s Association, Mr Ashok Kumar Singh, who supplies local exporter Maqere with vegetables. Mr Singh was not able to expand his farm because of poor drainage. He farms on a 5-acre piece of land and with IKSA assistance to improve drainage, he can now access another 10 acres of farm land. The additional land of six acres allowed him to plant sugar cane and intercrop with okra and cowpea. He is able to earn extra income from sale of cash crops before the sugarcane is ready for harvest. The IKSA project helped with drainage through hiring an excavator to desilt existing drains, lay down new drains and culverts allowing trucks and equipment to cross the fields.

The European Union IKSA project is based in Lautoka and implemented by the Secretariat of the Pacific Community Land Resources Division. The project aims to deliver better livelihood outcomes for the families of Fiji’s sugar belt region. To allow this to happen, farmers rely on better access to improved farming technologies and marketing methods.

European Union IKSA project team leader, Mr Waisiki Gonemaituba said the project’s main objective is to help cushion the economic and social impact of the sugar sector by supporting a diversified market driven agriculture sector. The program is designed to alleviate poverty for the most vulnerable groups in sugar dependent areas.

Contact for more information:
Waisiki N Gonemaituba
(WaisikiG@spc.int)