

Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources¹

Final Project Report Form

I. General Information

Applicant contact information	
Organization name	Secretariat of the Pacific Community (SPC)
Organization type	International Organisation
Contact person	Dr. Ken Cokanasiga
Position	Animal Health & Production Thematic Team Coordinator
City/Country	Suva, Fiji Islands
Address	Private Mail Bag, Suva, Fiji Islands
Telephone	(679) 337 0733
Mobile	(679) 9784365 (Nichol Nonga)
Fax	(679) 337 0021
E-mail	kenc@spc.int ; nicholn@spc.int
Website	www.spc.int
Skype contact	

Project summary			
Project title	"South West Pacific Animal Genetic Resources Project – Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands"		
Date of signature of the LoA	08/10/2013	Reporting period	Final
Total Budget	US\$100 000	Funds received to date	US\$79,930
Delay in the reporting			
Responsible officer (FAO)	Paul Boettcher		

I. Progress and outputs

Executive summary
<p>Provide essential information about the progress and the outputs produced during the lifetime of the project. Write in a straightforward, clear and concise narrative style, being sure to address the following seven aspects:</p> <p>Executive Summary</p> <p>The South West Pacific Animal Genetic Resources (AnGR) Project – Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands (GCP/GLO/287/MUL)' is a regional project funded by Food and Agriculture Organisation (FAO) and coordinated and implemented by the Pacific Community (SPC) in these three countries. The regional concept was part of the portfolio of projects submitted under the First Call for proposals related to the FAO Trust Account in support of the Global plan of Action (GPA for Animal Genetic Resources) and approved for funding by the Commission on Genetic Resources for food and agriculture. There were twenty (20) key outputs projected under the project. Prior to implementing the</p>

¹ The Global Plan of Action for Animal Genetic Resources can be found at <http://www.fao.org/docrep/010/a1404e/a1404e00.htm>

project, consultations were conducted with Fiji, Niue and Cook Islands authorities with a Letter of Agreement (LoA) signed between SPC and the countries to support the project activities. Three (3) introductory workshops were conducted in each of the countries to introduce the details of the project aims and objectives, activities, timelines, budgets to establish the conservation centres and the expected outcomes of the project. Construction and establishment of breeding, multiplication and conservation centres in the countries was one of the major aims of the project. Five conservation centres were established under the project; one for indigenous pigs in Fiji, three for indigenous chickens in Niue and one centre in Cook Islands. Some specific equipment and tools were purchased in support of the activities and to get the centres operational and productive. A description record of the indigenous pigs and chickens on the local environment, feed, water and production systems on which these breeds live under was developed (Annex 10). To determine the genetic diversity in the chicken breeds in the Cook Islands, a total of thirty (30) chicken blood samples were randomly collected from ten (10) farmers around Avarua Island, Cook Islands on FTA cards, dried and stored for DNA analysis. The results of the DNA analysis to determine the indigenous chicken genetic diversity in the Cook Islands is yet to be done. An important regional field day exhibition as a public awareness in promoting the AnGR conservation activities was conducted in Niue in October 30 – November 5, 2015 in which an animal genetic resources development, breeding and conservation brochure was launched during the CRGA meeting in Niue Nov 2015. GIS maps for Niue and Cook Islands and Fiji have been developed to show collection sites of sources of breeds, sites of the conservation centres and locations at which chicken blood samples were collected particularly in the Cook Islands. An exit strategy was developed to implement some of the unfinished outputs and monitor the operations of the centres. Breeding and production have commenced and performance records of the breeding stock and off-springs will be collected to help on selection, breeding and distribution to farmers. Majority of the outputs in the workplan have been achieved whilst some outputs have yet to be completed fully and a few yet to be undertaken (*see section 3 for details*). The project had provided a number of real impacts and benefits to the participating countries. Conserving and maintaining these breeds is a long term benefit to men, women, youth, children and the future generations of these nations and the region, to utilise these resources for food security and livelihood. The project has increased the likelihood of these breeds to be conserved which now established four (4) chickens breeding sites, three in Niue and one in Cook Islands and one pig breeding centre at the Koronivia Research Station, Fiji. Long-term sustainability is an important factor as experience showed a lot of past projects' related activities implemented have not been sustainable and as thus SPC in collaboration with the country's ministries and departments have put in place mechanisms and plans that would help ensure long term sustainability. Data and information collected during the lifetime of the project could be inserted into the DAD-IS network as described in section 6.

1. Introduction of the main advancements of the project

The South West Pacific Animal Genetic Resources (AnGR) Project – Conservation of indigenous breeds of chickens and pigs in Fiji, Niue and Cook Islands (GCP/GLO/287/MUL) is a regional project funded by Food and Agriculture Organisation (FAO) and coordinated and implemented by the Pacific Community (SPC) in the three countries. The initiative was a regional concept as part of the portfolio of projects submitted under the First Call for proposals related to the FAO Trust Account in support of the Global plan of Action (GPA for Animal Genetic Resources) and approved for funding by the Commission on Genetic Resources for Food and Agriculture. Unfortunately, due to limited funding only three countries were able to participate, Fiji, Niue and Cook Islands. A major objective of this project is to establish on-farm conservation centres to conserve specific indigenous pigs and chickens that have been identified in the FAO/SPC “SW Pacific Inventory and Characterisation of Animal Genetic Resources Pilot Project (GCO/GLO/157/MUL) conducted in Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu in 2008 - 2010.

Twenty (20) outputs were projected on the project workplan with the ultimate aim to achieve establishment of conservation centres for indigenous pigs and chickens in the countries and also to address the sustainable use, development and conservation of livestock genetic resources for agriculture, food production, rural development and environment as stated under the Global Plan of Action for AnGR (FAO, 2008).

Five conservation centres were established under the project; one for indigenous pigs in Fiji, three for indigenous chickens in Niue and one centre in Cook Islands. The centres are purposely for the collection of indigenous stock within the country, breeding, multiplication, conservation and distribution of healthy breeding stock to interested stakeholders. The chicken centres in Niue and Cook Islands are hosted by private farmers whilst the pig centre in Fiji is hosted by the Ministry of Agriculture. Apart from breeding, multiplication and conservation, the centres are anticipated to be used as platforms for research, training and development to improve the animal genetic resources conservation and food security issues in the countries. All host farmers /institutions have gone through an introductory workshop and capacity building to empower them for greater responsibility to properly manage the breeding and utilisation of pigs and chickens.

All activities have been completed at the end of the non-cost extension duration of the project which from 8th October 2015 to 8th April 2016 with no activity implemented after this date. The expenditures displayed in the financial report were expenses incurred from the beginning of the project to end of the project (8th April 2016).

2. Activities undertaken (please put as annexes workshop proceedings, list of participants, pictures, etc.)

a) Consultations and Letter of Agreement (LoA)

Prior to implementing the project, consultations with the national authorities were conducted to get the participating countries to agree and support the project outputs /activities. To confirm the agreements with the relevant authorities, letters of Agreement between the service provider (SPC) and the participating countries were developed by SPC, circulated for country's comments, acceptance and signed (Annex 9 LoA – Fiji, Niue and Cook Islands). The LOA spells out the details of the project and roles of each partner of the project.

b) Introductory workshops

Three (3) introductory workshops were conducted in Fiji, Niue and Cook Islands. The first two workshops were conducted in November 2014; for Niue it was held at the R Lina's Restaurant in Alofi, Niue, Monday 3rd Nov 2014; the next one was conducted in the Cook Islands which was held at the Ministry of Agriculture Conference Room, Rarotonga, Cook Islands, Thursday 6th November 2014 and the final one was conducted in Fiji, held at the Agriculture Koronivia Research Station Conference Room on 5th June 2015 (*see annex 1. for workshop report*).

The purpose of the workshops was to introduce the details of the project, aims and objectives, timelines, details of the work plan activities, establishment of the conservation centres and the expected outcomes of the project. Workshop participants were briefed on the global, regional and national status of the animal genetic resources and its significance to the global food and agriculture and the threats posed to these resources. On a participatory approach, the participants did group works on identifying breeding objectives of the conservation centres. Plenary sessions were useful discussion times when participants shared experiences, husbandry management issues and other issues relating to the development and conservation of local AnGR.

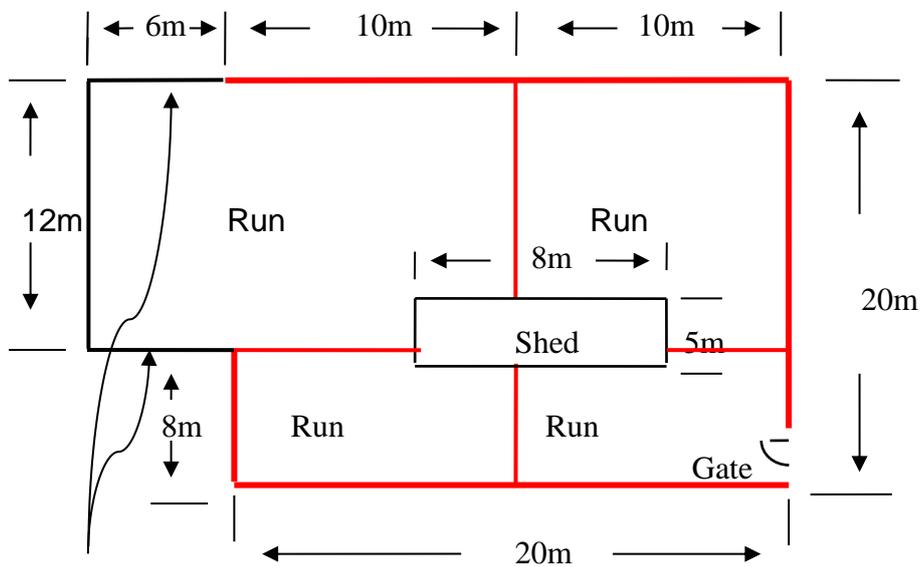
In Niue, thirteen (13 - 3 females, 10 males) participants from the Department of Agriculture, Forestry and Fisheries (DAFF) and farmers around the country attended the workshop; 13 participants (all males) from Takamoa Theological College and farmers in Cook Islands attended; and in Fiji, twenty seven (27 - 12 females, 15 males) participants from the Ministry of Agriculture and village livestock farmers attended (*see annex 1. for the workshop report*).

c) Construction of conservation centres (procurement of materials)

Paramount to the project is the construction and establishment of the conservation centres hence it was necessary to procure materials for the facilities. Due to the limited funds available, it was seen necessary to look for ways to reduce costs and one way identified was to engage in a cost-sharing concept with the countries. Thus, it was decided that each country would identify ways on how they would contribute to the concept.

In Niue a cost-sharing concept was adopted and thus three (3) existing chicken farms were selected as host sites for the conservation and multiplication centres. The design of the centres is “a house-with –a- run” (*see sketch design*) which includes a perimeter fence, dividing fences and the shed built at the center of the pen. The shed provides for chickens roosts, laying nest boxes, drinkers and feeders and brooding areas for hens and chicks. Selection of farmers with existing chicken farms was a strategy adopted to reduce costs and to encourage ownership of the farms for sustainability. Instead of procuring materials and building completely new facilities, the project would only have to cover costs of renovations. The cost of renovations included purchasing of cement, gravel, fence wire mesh, posts, corrugated iron roofing, timbers, nails and miscellaneous items. At the completion of renovations the project also assisted in purchasing chicken breeding stock, feed (both local and imported feed), equipment and other items (*sketch design*).

Sketch plan – *Sketch of the chicken “house with a run” design*



New fence extension

In Fiji, the Animal Health & Production Division, Ministry of Agriculture decided to bear the full costs of building a brand new pig shed for the breeding, multiplication and conservation of the indigenous pig breed. This is part of the Fiji National AnGR Conservation plan to create a centre where collections of indigenous pig breeds around the country are kept for breeding and conservation and distribution to stakeholders who are interested in getting the off-springs for production. The project cover other costs such as travel costs of staff to locations around the country to identify healthy and vigorous pigs, purchased them and brought them back to the centre. (See *photo in annex 12.*)

In the Cook Islands, it was difficult to share costs as the country did not have existing chicken farms nor were the country able to provide funds to help build a chicken conservation centre. However, instead of building two centres as originally planned, the decision was to build only one to reduce costs with the total cost of building and procuring of materials reduced considerably (*Annex 12*). The chicken centre is now built and expected to be completed and production commencing by May 2016. The Ministry of Agriculture however, provided kind assistance such as vehicles for transport, staff labour to build facility, provide staff to assist in blood sample collections as contributions to cost-sharing.

d) Procurement of equipment

There were some specific equipment and tools required to get the centres operational and productive depending on the country’s requirement. The following equipment was purchased, a camera

(Canon) to take images of activities, chicken bell drinkers and feeders for chickens for Niue farms.

e) Record of environment lived in by breeds and collection of local breeds

A description record was developed on the local environment, feed, water and production systems in which these indigenous pig and chicken breeds live under (*see annex 10*).

Free range extensive system - chickens. About 98% of indigenous chickens in Niue and Cook Islands live on extensive free range production system with no confinement and given zero management inputs. In extensive free range system, chickens of all ages and sizes move over a wide area to scavenge for food and water.

In Fiji, there are a few small scale intensive system farms where chickens are completely kept in confinement and fed with local feeds and supplemented with commercial feed and the rest of the birds in the rural areas are kept in free range extensive system. But for chickens under the free range system, shelters are not used and birds roost in trees, forest, kitchens and wherever they find a safe place from predators. It was difficult to gauge the production because they live in all sorts of scavenging environments where eggs are hard to collect because they lay eggs in bushes, in kitchens, in sheds and anywhere they could find a suitable place. The mortality rate of chicks is also high under the free range system with only about 10% going through to adults although it must be commended that these breeds are hardy and can survive the harshest environments.

Extensive systems – Pigs - Most indigenous pigs in Fiji, Niue and Cook Islands are also kept in extensive system whereby they are either kept in confinement in simple wooden pens or found free ranging and scavenging for feed and water. There are however, some farmers who have kept indigenous pigs with exotic breeds in smallholder intensive type system. Breeding pig stocks for the conservation sites are either taken from the extensive system or from free range pigs in the locations. An indigenous pig characteristics guide was developed to help staff on collecting indigenous pig breeds (see Annex 10.)

f) Collection of chickens blood samples in Cook Islands for DNA analysis

A total of thirty (30) chicken blood samples were randomly collected from around Avarua Island, Cook Islands on FTA cards, dried and stored for DNA analysis. There are two indigenous breeds of chickens in Cook Islands; one is the *Moa Kainga* or *homely chickens* found around the homes and the *Moa Taetaevao* or *wild chickens*. The samples were mainly collected from *Moa kainga* or free-range chickens around the homes by trapping them which is usually a difficult and time consuming task. Sampling was conducted to determine an estimate of the current levels of genetic diversity that exists within the chicken populations, the origins and the biodiversity in the Cook Islands. The blood samples are to be sent to a laboratory for DNA analysis. SPC is currently negotiating with Charles Stuart University, Australia to help do the analysis. Part of the last tranche payment in the project is intended to be used for the DNA analysis and need to commit funds for this particular activity. A set of data and information has been collated on these chicken samples and will be part of the analysis report.

g) Breeding and multiplication of local breeds

Breeding, multiplication, conservation and distribution of the indigenous breeds are central to the project focus and as such the centres were established to achieve these aims. Collection of indigenous pig and chicken breeding stocks were done throughout the villages and island communities in the countries.

For example in Fiji, indigenous pigs that display indigenous characteristics were identified, purchased and brought from various islands and locations around the country to the centre. A sample of important factors to look for in the stock were hair colour, type of hair, shape of snout, body size, body length, tusks, ear size and shape, litter sizes, utilising limited feed, etc. (*Annex10. characteristics description of pigs and chickens*). All breeding stock of pigs and chickens collected are kept in the conservation centres for breeding and multiplication to help in conserving and maintaining these breeds for future use.

In Niue and Cook Islands indigenous chickens are endemic and they provided a good source of food especially protein to the local population and an important source during post-disasters when food is scarce. In Niue, free range chickens are commonly slaughtered and prepared as a special menu during Sunday lunches or during important occasions. This practice of utilising this food source is a good thing as this would encourage people to keep and maintain these chickens for their food and conserve this specific breed. An important factor is that the Department of Agriculture, Forestry and Fisheries, Niue a policy strategy that discourages import other breeds of chickens in the near future. The country is proud to have an unique breed of chicken and they are committed to maintain the breed.

h) Recording of performance of off-springs on site

Data recording of performances of off-springs on site activity is yet to be conducted due to the time taken for the centres to be built and established and for the breeding to take place. Recording of performances is part of the exit strategy for host farmers, institutions and counter parts to take responsibility in carrying out this activity after the project has ended as this an important data to be collected for future use. Data is to be collected through the institutions in-country.

i) Promotion and public awareness of local breeds.

An important regional field day exhibition as a public awareness in promoting the AnGR conservation activities was conducted in Niue in October 30 – November 5 2015. This was a field day exhibition put on for the Committee of Regional Government Administrations (CRGA) representatives, (SPC' governing body) meeting, held in Niue. The exhibition was an important event to show-case to members, the conservation of the indigenous chicken breed in Niue and its importance in every country's biodiversity and food security. The aim is to inform countries in the region of the animal genetic resources conservation, its importance and the countries mutual obligation to incorporate AnGR activities in the national action plans. To lose any species or breed to extinction due to neglect and inaction by governments will be regretted.

j) Development of technical briefs and brochures

In the duration of the project, the project developed a technical brochure which informs the public on the importance of developing and conserving biodiversity and indigenous animal genetic resources in every country. An animal genetic resources development, breeding and conservation brochure was compiled, printed and launched during the CRGA meeting in Niue Nov 2015. The brochure is now available for access on this link: <http://www.spc.int/lrd/animal-genetics/animal-genetic-publications>

k) Distribution of off-springs to interested stakeholders

The distribution of off-springs to interested stakeholders is still to be done due to the time it will take for the conservation sites to produce off-springs after the project has ended. This activity has been included in the exit strategy for the hosts/owners of the centres to sell off-springs as an income generation from the centres to interested farmers. Distribution of healthy stock should fill the gap of conserving indigenous breeds and identifying resilient breeds to climate change.

l) GIS maps developed of sources of breeds and sites of centres

GIS maps for Niue, Cook Islands and Fiji have been developed to show sites of sources of breeds, sites of the conservation centres and locations at which chicken blood samples were collected particularly in the Cook Islands. (Annex 11:

m) SPC travels to countries to implement activities.

SPC international travels to implement project related activities to Niue and Cook Islands have increased to seven as opposed to four as planned in the original work plan. The increase is due to the limited capacities that countries have to implement construction and renovations to the chicken fences and thus countries have requested SPC assistance.. Although the number of travels increased the travel costs remain within the budget with no additional funds required.

n) Exit strategy for countries.

A matrix was developed which contained the specifics of the Exit Strategies developed for the countries (Annex 9.). A simple matrix that listed the major activities that needs to be addressed, with time lines, responsible bodies, costs to implement and other required actions.

3. The extent to which outputs have been achieved (please fill the work plan status in Section II)

The majority of the outputs in the workplan have been achieved whilst some outputs have not been completed fully and a few yet to be undertaken. The gantt chart in Section II, showing various outputs filled to show status of each output. A “traffic light” section is inserted in the gantt matrix to show the stages of progress these outputs are at.

The following outputs have yet to be implemented or completed;

Activity 7 -

Collection of chicken blood samples from Cook Is. for DNA analysis. Thirty (30) dried blood samples on FTA cards have been collected and stored at SPC for further DNA analysis with the raw data records also kept at SPC.

DNA analysis - The DNA analysis for the Cook Islands chicken blood samples have yet to be undertaken. SPC is negotiating with Charles Stuart University, Australia to do the analysis. The samples are expected to be analysed as soon as agreement has been reached.

Activity 12 - Recording of performance of offspring on research sites

The recording of off-springs' performances is behind schedule since most of the sites were late in producing off-springs that could be recorded. Arrangements have been organised with the centres' owners and hosts to record the performances not only for the project but these will be helpful in stock selection and breeding

Activity 17 - Distribution of off-springs to interested stakeholders

The distributions of off-springs to interested farmers are expected to take place well after the end of the project which is expected to start in the second half of 2016.

Activity 18 - SPC travels to countries to conduct monitoring and "lesson learnt" workshops in countries

SPC has not been able to conduct this activity as there was not enough time to do them prior to end of the project, as well limited funds to conduct the "lesson learned" workshops in-countries. "Lessons learned" have instead been collected and shared to SPC via the Country's focal point for the project (see section II (3)).

4. Description of the project impacts, including benefits obtained by local stakeholders and particularly indicating if there were any gender-related benefits.

Maintaining long-term conservation of indigenous pig and chicken breeds for agriculture and food security is a major issue in the region. The establishment of the centres are anticipated to achieve the following impacts and benefits to the people of the nations as well as the region;

Foremost is the impact of conserving these pig and chicken breeds for future use.

An important impact is the demonstration to the communities of alternative appropriate improved models especially of chicken "house with a run" fences with affordable inputs. Women and youth can build such simple models to improve management and production of chickens. Confining chickens instead of free ranging improves husbandry practices and production such as collection of eggs, feeding and management of chickens. Similar benefits apply to free range and confined pigs in small pens in villages which will improve management and husbandry of livestock. Women and youth can now plan their daily activities to attend to the farms.

A benefit to the farm owners and other farmers in Niue is the availability of chicken manure. Due to the chickens being confined, there's more manure for collection and use as organic fertiliser to grow vegetables and crops which farmers have not been using previously (see photo 1).



Photo 1. Vegetables grown using manure from the farm



Photo 2: Farmer's daughter engaged in building. Photo 3: Farmer's wife (right) engaged in building

The chicken 'house -with -run' design is designed not to change the normal free range way of life for the birds completely but to improve management and increase production by still using the 'run areas' for foraging and scavenging. Women and youth will be able to feed chickens in the house and let chickens out in the run area for extra feed during the day.

During the lifetime of the project, farmers were shown how to utilise local feed resources to feed their chickens. Using local feed resources will benefit farmers in reducing the cost of importing expensive feed and women and youth and children can collect feed resources to feed their pigs and chickens.

Confining pigs and chickens in improved housing makes it easier for farmers and family members (men, women and youth) to do proper husbandry and business keeping of the operation for livelihood. The benefit to the stakeholders is that they no longer have to walk long distances to feed and manage the livestock.

The pig centre in Fiji will have a major impact and benefit to the

The impacts of these *in situ* established conservation sites are many folds which include improved management, increased production for food security and livelihood and conservation of valuable indigenous livestock breeds for future use in the countries.

5. Description of how the project has increased the likelihood for survival of the breed

The normal production system for these local pig and chicken breeds is the extensive free-range production system and the likelihood of the survival of the breeds is dependent upon rural farmers keeping and maintaining the particular breed/s. The project has increased the likelihood of these breeds conserved with four (4) chickens breeding sites, three in Niue and one in Cook Islands and one pig breeding centre at the Koronivia Research Station, Fiji. These *in situ* sites are designed to collect breeding stock, breed, multiply, conserve and distribute off-springs to interested farmers. These sites are expected to continue collecting indigenous breeding stock for breeding, not only to increase the numbers but to maintain the genetic purity of the breeds and distribute to rural farmers to replenish the rural villages. Awareness campaigns conducted in countries and the region through awareness talks, posters and brochures and a “field day exhibition” in Niue during the regional CRGA meeting has reaped some exciting rewards. Countries are seriously considering developing and conserving the indigenous breeds for food security. A recent good example is the news item in Cook Islands which called for the promotion and conservation of the Cook Islands local chickens which can be seen through this link; <http://www.cookislandsnews.com/national/local/item/58108-wild-chickens-a-valuable-food-source>; In Niue, indigenous chickens are frequently slaughtered for family meals and so the families have increased inputs to provided supplement feed and water to the free range chickens around their homes. This practice is seen to be helpful in increasing productivity and numbers of chicken populations. In Cook Islands, similar practice is encouraged and the recent shortage of chicken meat from New Zealand is likely to be

6. Indicate any plans that have been put in place to ensure long-term sustainability of project related activities.

Long-term sustainability is important as experience show a lot of past projects’ related activities implemented have not been sustainable. Due to various reasons, many have failed to be sustainable after the projects’ life lapsed. SPC in collaboration with the country’s ministries and departments have put in place some plans that would help ensure long term sustainability. The following are;

- a) Initial selection of host farms/institutions were encouraged to be owned and run by private ownership.
- b) Production operations and management of these conservation centres are encouraged to operate in commercial /semi-commercial type operations in producing stock, meat and eggs for sales. Income generated from sales of products will help to maintain the operations in the long run.
- c) Three (3) conservation farms in Niue are hosted by private farmers selected on their experience, knowledge and skills gained through experience owning chicken farms which have been operated in semi-commercial type system.
- d) In Fiji, the pig centre is hosted by the Fiji Ministry of Agriculture as a national centre for indigenous pig research, breeding, multiplication and conservation for the country. This is a national initiative to increase indigenous pig conservation and utilisation.
- e) In the Cook Islands, the conservation centre is hosted by a private farmer in collaboration with the Ministry of Agriculture. In the initial phase of the operation, Ministry of Agriculture will manage the operation with the farmers learning as the operation continues until such a time when the farmer is confident to take over and manages the operation with MOA continues to monitor the operation and assists when requested.

- f) Encouraging rural /village farmers to maintain keeping their specific local livestock breeds
- g) The exit strategy developed in countries is there to ensure sustainability is addressed.
- f) Future regional plans are to establish cryo-conservation mechanisms using these established centres as the sources of materials for cryo-conservation.

7. Briefly describe the data that was collected and will be inserted into DAD-IS (Domestic Animal Diversity Information System)

Indigenous pig and chicken breeds - Some breeds that could be included in the DAD-IS

There are data and information collected during the lifetime of the project that could be inserted into the DAD-IS.

Niue indigenous Chickens (*Moa Niue*)- The results of the first AnGR Inventory and DNA characterisation pilot project conducted in Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu has identified a very specific indigenous chicken breed not tampered with by commercial breeds in Niue. *Moa Niue*, as is known locally is endemic and can be found in the forests and around the homes in Niue. The breed is specific to Niue and the current free range system will sustain the breed for at least another 10 – 15 years as there are no other chicken breeds allowed into the country to keep its purity. The conservation centres established in Niue are there to provide an option to breeding and multiplication of eggs for sale and eggs to hatch to increase breeding stock and meat.

Cook Islands indigenous chickens (*Moa Cooks*) - There are two specific local chicken breeds known to exist in the Cook Islands. These are the “*Moa kainga*” translated as “*Homely Chicken*” or “*Chicken around the Home*” and the “*Moa Taetaevao*” or *Wild Chicken*. The *Moa kainga* is the homely chicken and lives around the homes and the *Moa Taetaevao* or *wild chicken* lives in the mountains and valleys in the forests. The *moa kainga* could be tampered by other breeds especially the commercial layers released in the villages that potentially inter breed with the local chickens but the *moa taetaevao* or *wild chicken* is believed to be in its pure state due to its remote habitat. The genetic diversity and origin of these two breeds can only be confirmed when the blood samples collected have been analysed. A local media in the Cook Islands has an article on conservation and utilisation of the local chicken in their news as per link; <http://www.cookislandsnews.com/national/local/item/58108-wild-chickens-a-valuable-food-source>

Chicken blood samples for DNA analysis: Thirty (30) chicken blood samples were collected in Cook Islands both from the *Moa kainga* and *Moa taetaevao* but are yet to be analysed, anticipating the results to determine the genetic diversity and origins of the chickens. Prior to analysing these samples, there is already some awareness programme carried out to the public and also in the media showing the significance of conserving and utilisation of the indigenous livestock breeds for food security. The data and information from the analysis when completed is hoped to be uploaded into DAD-IS.

Fiji indigenous pigs - There are also two distinctive indigenous pig breeds in Fiji, these are the “*vuaka ni koro*” or *village pigs*” and “*vuaka ni veikau*” or *bush pigs* or *feral pigs*. It is understood that *vuaka ni koro* pigs live around the villages and are usually kept in small pens or free range around the villages and the *vuaka ni veikau* are found in the forests or bush. There is however, some crossbreeding between these two breeds especially when litters from the feral are captured and kept with the village pigs for breeding. The trend is that both breeds are still in a strong position to remain pure now but are threatened by the introduction of exotic breeds for cross breeding. The preference of local population to the taste indigenous pig breed meat is a good sign that the local breeds will be maintained by rural livestock keepers. Some data are being collected on the pigs’ weight, feed, litter size, litter weight, etc., these will be used to determine the breed characterisation of the indigenous pig breeds.

III. Problems encountered and actions taken to resolve them

If relevant, please explain delays or any obstacles that hindered you to deliver so far, and which actions you have taken to keep to the original work plan and time schedule

1. Explanation for any instances where progress was behind schedule and plans undertaken to rectify problems and assure completion of all activities.

The following important outputs have not been completed by the end of the project ;

A no-cost extension of a further six months was requested by the implementing agency (SPC) to the FAO prior to the end of the project. This no-cost extension was deemed necessary due to circumstances beyond the control of both parties and amended the LoA for a further extension to 8th April 2016. Since then all activities have stopped and no further activities were implemented.

i) The first important output behind schedule was the establishment of the conservation centre in the Cook Islands. Originally the project was to establish two centres but due to shortage of time and to save costs, the Cook Islands Ministry of Agriculture and SPC have agreed to build one facility instead of two. The delay was due to the first host, Takamoa Theological College had pulled out of hosting the facility. According to the environmental authorities, the land selected was not suitable for chicken farming which caused the delay. Work has started on the new site on a piece of land hosted by Mr. Piri Tarapu in collaboration with the Ministry of Agriculture. The management of this facility will be executed in the initial stage by the Ministry of Agriculture and later when the farmer had acquired the skills to completely take over the management of the facility. The new facility has now been completed and will soon be stocked with indigenous chickens.

ii) The second one was the DNA analysis of the chicken blood samples collected from the Cook Islands is behind schedule. The DNA analysis is expected to determine the genetic diversity and biodiversity in Cook Islands. Samples have been collected with data and are ready to be sent to a credible laboratory. There is no DNA analysis capacity within the Pacific Islands which has become a problem. Australia and New Zealand are the only countries with this capacity and thus, SPC is currently negotiating with Charles Stuart University, Australia to analyse the materials. This activity is planned to be done after the project has ended and funded when the last tranche payment is sent to SPC after the project completion report is submitted.

iii) The other major activity that has not been completed is the “Lessons Learned” workshops planned to be carried out at the end of the project. Major obstacles include limited time within the project’s time frame to conduct the workshop and also limited funds to implement. However, we have collected major lessons learnt from counter parts in the countries via emails and reports from contact persons. It is anticipated to piggy-back this ‘Lesson Learned’ activity on any future regional meetings or workshops conducted this year by the Animal Health & Production when Fiji, Niue and Cook Islands participants attend such meetings.

iv) Due to the delay in getting centres fully operational in time, the distribution of off-springs to interested stakeholders is also delayed hence the result production of off-springs and distribution was also delayed.

v) Promotion and public awareness or field day promotions of stock availability for Fiji and Cook Islands have yet to be conducted. Plans are in place to carry out these public awareness and promotions during national agriculture shows. These national shows will be held later this year. In Fiji, the indigenous pigs collected around the country, currently raised at the Koronivia Pig Research

Centre, Koronivia are to be publicly displayed during the Agriculture Trade Shows in August 2016.

2. Description of any changes that were not on original work plan (no additional funds will be available)

Number of international travels especially to Niue and Cook Islands by SPC to implement the project activities including construction /renovations of chicken pens to getting the pens completed and operational have increased as opposed to the number stipulated in the workplan (see duty travel reports - Annexes 2 – 7). Fortunately expenses stayed under the budget. The travels were absolutely necessary as the countries lacked the capacity to undertake these work and so SPC had to intervene. There were no additional funds needed from the project although SPC had to dip into other budget lines to fund the activities when there are inadequate funds upfront in the project budget. These are some of the expenditures not reimbursed previously to their correct budget lines and now rectified in this financial report.

At one stage of the implementation process, the project was going to assist a local operator in Fiji who was collecting, breeding and selling indigenous chickens. This however was scrapped due to shortage of time to implement the assistance. So all in all the project stuck to the activities recorded in the original workplan.

3. Lessons learned

There are some valuable lessons learned during the life of the project which could be used to improve future projects. Lessons learned include:

- i) Costs of travelling to the countries to implement activities due to geographical scatter is expensive and time consuming.
- ii) The limited capacities in PICTS to implement projects, including competing priorities for national staff.
- iii) Project hosts in country rely too much on supervision from ministry staff or SPC to implement and progress activities.
- iv) Natural climatic events such as cyclones, floods and droughts that may delay implementation and interfere within country activities
- v) Duty travel that coincides with national holidays
- vi) Selection of Pacific Islands countries and territories (PICTs) for projects must take into account capacities and commitments of PICTs to actually undertake these activities within the required timeframes.
- vii) Recording and collection of data prior to implementation, early part of project, later and final part of project need to be factored in the project. A survey need to be conducted prior to implementation to see changes
- viii) Number of overseas travels for SPC staff to implement projects should be well accounted for in future project concept due to limited capacities in-countries and competing priorities to implement projects.
- ix) Challenges to getting required quotes for materials and equipment in-country for payments has delayed a lot of work due to the limited hardware shops available in those countries
- x) To make financial processes easier, ministries/departments staffs need to be trained on the financial procedures for SPC as well as for national government financial institutions.

IV. Budget explanation

Please describe and justify any significant (>20%) differences in any budget line relative to the original budget.

SPC certified statement of income and expenditure

 <p>Pacific Community Communauté du Pacifique</p>		<p>SPC PRIVATE MAIL BAG, SUVA, FIJI TELEPHONE: (679) 3370 733 FAX: (679) 3370 021</p>		<p>STATEMENT OF INCOME AND EXPENDITURE FOR THE PERIOD 08 OCT 2013 - 31 MAR 2016</p>	
<p>DONOR AGENCY : FAO PROJECT TITLE : South West Pacific Animal Genetic Resources - SPC REFERENCE NUMBER : LTHP01XS REPORTING CURRENCY : USD</p>					
		<p>INCOME PERIOD</p>			
		8/10/2013 to 31/03/2016	TOTAL INCOME		
<p>Funds Received - Oct 2013 Funds Received - Jan 2015 Funds Received - Jul 2015 Funds Received - Mar 2016</p>		30,000 15,000 24,965 9,965			
TOTAL FUNDS AVAILABLE		79,930	79,930		
		<p>EXPENDITURE PERIOD</p>			
		8/10/2013 to 31/03/2016	TOTAL EXPENDITURE	BUDGET AVAILABLE	EXPEND. RATE
<p>Project implementation and management Travel Workshops and training Materials and equipment Logistical support Community awareness Miscellaneous</p>		17,288 31,840 8,047 15,339 815 1,397 5,189	17,288 31,840 8,047 15,339 815 1,397 5,189	7,112 5,360 1,483 1,611 505 2,203 1,811	71% 86% 84% 90% 62% 39% 74%
TOTAL EXPENDITURE		79,916	79,916	20,084	80%
BALANCE OF FUNDS ON HAND AS AT 31 MARCH 2016			14		

Date: 25/07/2016
 Certified Correct: Ms. Unise Caward
 MANAGEMENT ACCOUNTANT
 THE PACIFIC COMMUNITY
 SUVA, FIJI

Pacific Community (SPC)
 3 Luke Street
 Suva
 Fiji Islands
 3370733
 3370021
 kenc@spc.int; nicholn@spc.int;
 www.spc.int

Food and Agriculture Organization of the United Nations
 GPA-FS @fao.org
 Paul Boettcher
 Viale delle Terme di Caracalla
 Rome
 Italy
 39 06 570 5560
 paul.boettcher@fao.org

FINAL FINANCIAL STATEMENT								
FAO PURCHASE ORDER (PO)								
DATE OF ISSUE OF REPORT:								
Currency:								
USD		- United States Dollars						
Cat No	Items Description	Units of measurement	Qty (no. of units)	Unit Cost	Total Cost	Increase/ Decrease from Original Estimate	Type of supporting documentation	Documentation reference no
				USD	USD			
1	HUMAN RESOURCE INPUTS (Staff time and consultants...)							
1.1	Senior Technical Expert(s)				0			
1.2					0			
1.3					0			
1.4					0			
1.5					0			
1.6					0			
1.7					0			
...								
2	EXPENDABLE EQUIPMENT ANCILARY TO SERVICES							
2.1	Materials and Equipment		1	15,339	15,339			
2.2					0			
2.3					0			
2.4					0			
2.5					0			
2.6					0			
2.7					0			
...								
3	TRAVEL (Flights, inland travel...)							
3.1	Travel		1	31,840	31,840			
3.2					0			
3.3					0			
3.4					0			
3.5					0			
3.6					0			
3.7					0			
...								
4	ACCOMMODATION (board and lodging costs...)							
4.1	Workshop and Trainings		1	8,047	8,047			
4.2					0			
4.3					0			
4.4					0			
4.5					0			
4.6					0			
4.7					0			
...								
5	GENERAL OPERATING AND MAINTENANCE EXPENSES							
5.1	Project Management and		1	17,288	17,288			
5.2					0			
5.3					0			
5.4					0			
5.5					0			
...								
6	LOGISTICAL SUPPORT							
6.1	Logistical Support		1	815	815			
6.2	Community awareness		1	1,397	1,397			
6.3					0			
...								
7	MISCELLANEOUS							
7.1	Miscellaneous		1	5,189	5,189			
7.2					0			
7.3					0			
...								
	TOTAL DIRECT COSTS				79,916			
	INDIRECT COSTS	Overhead rate (if applicable):		0%	0			
	TOTAL COSTS INCURRED				79,916			
	PAYMENTS RECEIVED FROM FAO TO DATE			DATE	AMOUNT			
	PAYMENT 1				30,000			
	PAYMENT 2				15,000			
	PAYMENT 3				24,965			
	...				9,965			
					0			
					0			
					0			
					0			
					0			
					0			
	TOTAL AMOUNT RECEIVED FROM FAO TO DATE				79,930			
	BALANCE				-14			

Date: 25/07/16

Name of SP's Chief Accountant (print):

Signature:



Financial Justification Notes;

Attached are the financial statement certificates as required by FAO (1st is the SPC financial certified statement and 2nd is the FAO 'Final Financial Statement Sheet 6'). The FAO financial reporting template is attached separately which shows all transaction details of the project.

- The service provider has spent the majority of the four (4) payments transferred from FAO to SPC. Note that this financial report is up to April 2016.
- Two payments from FAO to SPC (July 2015 - USD25, 000 & March 2016 – USD15,000) had USD35.00 less in both cases, corresponds as bank charges. The ANZ bank explained that the payment sent by MIDLGB22 through their USD correspondent MRMDUS33 who deducted their charges of USD25, 00 and MRMDUS33 sent payment to ANZ's USD correspondent CHASUS33 who deducted their charges of USD10, 00 and thus the total of USD 35, 00. Both payments were sent via the similar way.
- The AnGR project reimbursed two internal budget lines used when funds in the project were inadequate, and these are now rectified and included in the revised financial report.
- **Materials and equipment item:** This line item is now 90% spent as expected due to the construction materials required to get these sites established. The remaining 10% of the budget is expected to be used up to get the Cook Islands Chicken conservation site completed and operational.
- **DNA analysis laboratory costs:** This activity cannot be completed in time in the duration of the project due to the time taken to negotiate the laboratory to analyse the samples and the costs. It is hoped that we can still do the analysis with Charles Stuart University (CSU), Australia with the final payment should FAO approves of it. It will be important to do the analysis to determine the origins of the chickens and the genetic diversity within the Cook Islands for future decision making for the region in terms of breeding and conservation

Annexes

Please list all reports and documents, finalized by the project during the reporting period. Include consultant's reports, workshop reports with full participants list, lab analysis reports, etc. Pictures are welcome.

List of Annexes:	page
Annex 1 - AnGR Introductory Workshop Reports, Fiji, Niue and Cook Islands 2014	- 23
Annex 2 – Duty travel report to Niue and Cook Islands November 2014	- 32
Annex 3 - Duty travel report Niue – June 2015	- 37
Annex 4 – Duty travel report Niue – July- August 2015	- 46
Annex 5 – Duty travel report Niue – October 2015	- 52
Annex 6 – Duty travel report to Cook Islands November 2015	- 57
Annex 7 - Duty travel report Cook Islands – March 2016	- 60
Annex 8 – A sample Letter of Agreement between SPC and the countries	- 66
Annex 9 - Exit strategy for Fiji, Niue and Cook Islands	- 71
Annex 10 - Characteristic description of indigenous pig and chicken breeds.	- 74
Annex 11 - GIS maps of Niue' chicken's homes and Cook Islands' blood samples collection sites.	- 78
Annex 12 – Photos of the project's related activities.	- 81

ANNEX 1

AnGR Introductory Workshop Reports - Fiji, Niue and Cook Islands

“South West Pacific Animal Genetic Resources Project – Conservation of pig and chicken breeds in Fiji, Niue and Cook Islands”

1. Introduction

Three AnGR introductory workshops were held in Niue, Cook Islands and Fiji from Nov 2014 - May 2015. This was an activity under the workplan of the AnGR project- conservation of pig and chickens breeds in Fiji, Niue and Cook Islands. The main objectives of the workshops are:

- (i) Introduce the technical components of the South West Pacific Animal Genetic Resources Project; Conservation of indigenous pigs and chicken breeds in Fiji, Niue and Cook Islands.
- ii) As an official launch in starting the implementation of activities of the project in the three countries.
- ii) Conduct participatory consultations with line ministries staff and farmers in the countries to determining and identifying the breeding, conservation and operation objectives of the conservation

The AnGR introductory workshop was held at the R Lina’s Restaurant /conference place in Alofi, Niue on Monday 3rd Nov 2014.

SPC Resources persons conducting the workshop -

1. Mr. Nichol Nonga, Animal Production Officer (Training, Research and Development) - AnGR SW Pacific regional focal point – on behalf of 22 SPC member countries, In charge of coordination and implementation of the project.
2. Andrew Tukana, Animal Production Officer (Extension), Assistant to coordination and implementation of the project.

I. Niue Workshop

The workshop was opened by the Senior Project Manager, Department of Agriculture, Forestry and Fisheries (DAFF), Mr. Poi Okesene on behalf of the Director of DAFF. At the workshop opening the Senior Project Manager stressed the importance of implementing the development and conservation of indigenous livestock in countries especially of pigs and chickens in Niue. It was important because in the previous AnGR Inventory and DNA Characterisation Project conducted in Fiji, Niue, Samoa Solomon Islands, Tonga and Vanuatu in 2008 -2010. The results indicated that the chickens found in Niue were quite specific and separate from other chickens in the other 5 countries. Thus we need to conserve and maintain these breeds for future conservation and food security.

At the workshop SPC presented a power point presentations (ppt) on Global overview of the AnGR status, implementation of the previous SW Pacific AnGR Pilot Project 2008 – 2010, the DNA analysis and characterisation results of the project, the overview of the new project “Conservation of indigenous pig and

chicken breeds of Fiji, Niue and Cook Islands project”, and the participatory approach to identifying, breeding, multiplication and conservation objectives of the centres. SPC also touched on the technical aspects of husbandry and management aspects of chickens raising, development and conservation of the indigenous Niue chicken breed. Plenary session discussion also shared experiences

The participatory approach was done through group work discussions and presentations of the findings after the groups’ work. Each group appointed a chair, note taker and a reporter who reported the findings of the group to the workshop.

a) Group work discussion

1. What are the current production systems used?

- Use current recipients of FAO TCP project to host the sites (cost-sharing)
- Use of “A” frame pens for chickens
- Current system good for communities because low inputs
- Local chickens products us healthier and away from imported products
- Current system can help to conserve the local breed
- System to produce hens for eggs, meat, manure
- Current system supplies national population with food security

2. How can we improving the system?

- DAFF to encourage breeding, multiplication and conservation and distribution of chickens and input to improve system
- Regular health checks
- Select characteristics of indigenous chickens
- Use local feeds
- Government or farmers to employ someone to monitor the system and ensure that it is followed
- We must ensure that there is no cross breeding and dilute the indigenous chicken genes
- Provide and encourage good local feed.

3. Markets

- Sell eggs, meat, feathers, manure
- Use for cockfights (sport)
- Sell plate of food to public at market days of chickens
- Sell more local chickens as more Asians , Fijians etc. are interested
- Local people to eat more local chickens
- Public awareness campaign to promote local chickens as nutritious food.

4. Selection of sites/ host farmers

- Initial selection was made by the workshop participants
- DAFF Director to finalise selection of hosts farmers

5. How to address sustainability

- Local pens to be used as the platform for research to identify appropriate farmers
- Use of local materials where possible
- Build shelter for chickens thatched roofs e.g. coconut leaves for cool
- Take ownership of projects
- Breeding, multiplication and distribution

- Operate as commercial to encourage income generation
- Provide good feed and water, shelter and management
- Operate sites as semi-commercial operations for income generation and provided public access to local chickens
- Maintain environment /habitat in which they live.

b) Participants

Thirteen (13) participants representing DAFF staff and chicken farmers and stakeholders attended the workshop (list of participants attached) in Niue. Participants were selected by DAFF authority. Although there were only 3 women that attended, they were outspoken and many of the farmers were also supported by their wives to attend the workshop.

No.	Name	Organisation	Gender	Age	Contact
1.	Crispina Konelio	Farmer	F	44	crispina.konelio@gmail.gov.nu
2.	Tom Misikea	DAFF	M	50	tomsnr.misikea@mail.gov.nu
3.	Poi Okesene	DAFF	M	43	Poi.okesene@mail.gov.nu
4.	Brendon Tauasi	Farmer	M	42	flex@niue.nu
5.	Sam Makatogia	Farmer	M	87	Mutalau Village
6.	Robert Jackson	Farmer	M	69	
7.	Peter A. Funaki	Farmer	M	51	
8.	P. Jacobsen	Farmer	M	60	
9.	James Poihenga	DAFF	M	49	
10.	Jamal Talagi	DAFF	F	29	
11.	John Hetutu	DAFF	M	48	
12.	Alana Tukunui	DAFF	F	34	
13.	New Aue	DAFF	M	35	

Photos 1 & 2: Workshop group work presentation and participants - Niue



II. Cook Islands workshop

1. Introduction

The introductory workshop was held at the Ministry of Agriculture Head Quarters Conference room, Rarotonga on Thursday 6th November 2014. Thirteen participants attended, including students from the Takamoa Theological College and some farmers. Unfortunately, the participants were all males as it was revealed that some women were also invited to attend but were busy on the day and did not turn up.

The purpose of the workshop were to present an overview of the global status of the AnGR, the implementation and activities of the SW Pacific AnGR Inventory and Characterisation Pilot Project conducted in Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu, the results of the DNA Analysis conducted with the samples of pigs and chickens collected from the six countries, and the activities of the new project SW Pacific AnGR Project – Conservation of pig and chickens breeds in Fiji, Niue and Cook Islands.

The other important part was to have a group discussion to discuss the breeding objectives of the conservation sites.

2. Opening address

The workshop was opened by the Secretary to the Ministry of Agriculture, Dr. Mat Porea (former FAO staff) and in his speech he emphasised on the importance of developing and conserving biodiversity which includes animal genetic resources for food security and environment. He also emphasised the importance of raising, producing and utilising indigenous livestock instead of concentrating production on exotic breeds because of their higher performance.

3. Workshop Group Discussion

Three groups were formed for the group discussion work and a reporter was selected to report to the plenary the discussions

The following ideas were brought but most of the ideas were similar to the Niue discussions with the same questions.

i. What are the current production systems used?

- Most indigenous chickens run in extensive free range system
- Very few people provide chickens with night shelter and supplement a bit of feed
- Current system good for communities to maintain because of low inputs
- Local chickens products us healthier and away from imported products
- Current system can help to conserve the local breed
- Current system supplies national population with food security

ii. How can we improve the system?

- DAFF to encourage breeding, multiplication, conservation and distribution of chickens and input to improve system
- Regular health checks on chickens
- Select characteristics of indigenous chickens, breeding and selection

- Identify and utilise local feeds.
 - Provide and encourage good local feed
 - Improve current system to produce hens for eggs, meat, manure for sales
 - Build shelter for chickens thatched roofs e.g. coconut leaves for cool
- iii. Markets**
- Sell eggs, meat, feathers, manure
 - Use for cockfights (sport)
 - Sell plate of food to public at market days of chickens
 - Sell more local chickens as more Asians , Fijians etc. are interested
 - Encourage more people to eat more local chickens especially the younger generation.
 - Public awareness campaign to promote local chickens as nutritious food.
- iv. Selection of sites/ host farmers**
- MOA authority has selected the host farmer as Takamoa Theological College, farmers
- v. How to address sustainability**
- Review national policies to include animal genetic resources breeding development, conservation and utilisation of local breeds
 - Use of local materials where possible
 - Build shelter for chickens thatched roofs e.g. coconut leaves for cool
 - Take ownership of projects
 - Breeding, multiplication and distribution
 - Operate as semi- commercial to encourage income generation and provide public access to products.
 - Provide good feed and water, shelter and management
 - Maintain environment /habitat in which they live.
 - Check that there is no cross breeding and dilute the indigenous chicken genes

4. Participants

There were 13 participants; unfortunately all of them were males and mostly students of the Takamoa Theological College with a few farmers. We were told that they had nominated some females but none turned up at the workshop venue during the week.

No.	Name	Organisation	Gender	Age	Contact
1.	Tangimetua Taomia	Takamoa Theological College	M	57	TTC
2.	Tautaiputa Saitu	Groundsman, Avarua	M	30	TTC
3.	William Tereora	Pearl farmer	M	56	TTC
4.	Tenura Marsh	Print Finisher, Takamoa	M	52	TTC
5.	Ngataua Puapu	Waste management	M	41	TTC
6.	Varetau Peau	Pearl farmer	M	38	TTC
7.	Campbell Ngatokoa	Student, Takamoa	M	23	TTC
8.	Iana Aitau	Takamoa, Avarua	M	47	TTC
9.	Hosea Toka	Student, Takamoa	M	25	TTC
10	Tuakana Marukore	Planter, Avarua	M	46	TTC
11.	Matameia Kaukura	Blind fitter, Takamoa	M	40	TTC
12.	Suku Marsters	Student, Takamoa	M	59	TTC
13.	Vata Vailoa	Student, Takamoa, Avarua	M	32	TTC

Photos 3 & 4: Group work presentation and participants



Part of the participants – Cook Islands



Participants group photo

5. Capacity building;

During the workshop we were able to do some chicken husbandry, management knowledge and skills training for the participants. It was important that the participants were given basic husbandry skills training on chicken management so that they can manage the project. They were advised on the production type of system and this be a “pen with a run” and mange on a semi-commercial type of production system for income generation and sustainability.

III. Fiji Introductory Workshop Report

1. Opening Address

The workshop was opened by the Permanent Secretary of the Ministry of Agriculture, Mr. Uraia Waibuta and it was attended by the Director Animal Health & Production Division, Mr. Tomasi Tunabuna, senior staff of the ministry, farmers from local farming communities and SPC staff. In his speech, Mr. Waibuta, spoke on the significance of conserving our indigenous breeds of livestock for our future generation on food security and livelihood. He thanked FAO and SPC for supporting this project through the Ministry of Agriculture and the rural farmers. At the end of his speech he declared the workshop opened and launch the activities of the project in Fiji despite work had already begun since 2014.

2. Agenda

The agenda of the workshop covered the various presentations regarding the overview of the global status of the AnGR, the implementation and activities of the SW Pacific AnGR Inventory and Characterisation Pilot Project conducted in Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu, the results of the DNA Analysis conducted with the samples of pigs and chickens collected from the six countries, and the activities of the new project SW Pacific AnGR Project – Conservation of pig and chickens breeds in Fiji, Niue and Cook Islands.

3. Participants;

There were 27 participants (15 Males, 12 Females) that participated in the workshop. The objectives were met as the technical component of the project was introduced and the participatory objective discussions were also conducted in group work discussions.

No.	Name	Organisation	Gender	Contact
1	Eseta Mauvu	Eseta's farm, Tovata	F	934117
2	Etuate Kuruwale	Eseta's farm, Tovata	M	8652176
3	Inoke Talemaibu	Matainoco Buretu	M	8422284
4	Esala Madanavosa	Bureni, Naitasiri	M	9121154
5	Vilikaso Nawaduadua	Q.V.S Farm	M	9356718
6	Austin Bowden-Kerdy	Happy Chickens	M	9386437
7	Rajneel Kumar	SRS	M	9549104
8	Teviat Tadu	Matuku Piggery	M	6230387
9	Avinesh Dayal	SRO – Pig Research	M	9240289
10	Sarwan Kumar	AO - Dairy	M	9664625
11	Mateo Fakitauna	P/AA - Pig	M	9885558
12	Mereia Vuniivi	AA- Pig Research	F	9885460
13	Saryeev Kumar Mani	AO –T/N	M	9314280
14	Eroni Tamani	OA	M	8627995
15	Salesni Lata	ATO – Dairy Research	F	9458007
16	Namita Devi	Project AA (Pig Res)	F	8748190
17	Maria Laqeta	IA (Press) Infor/com	F	9216562
18	Umenda Fos	IA (Press) Infor/com	M	9348094
19	Inoke Mononakaya	Dairy	M	9321467
20	Usa Naroi	AIO	M	6467232
21	Paulima	AH&P	F	9453800
22	Nause V	AH&P	F	8441696
23	Amania	Gau	F	7523395
24	Loata	Lakeba	F	7084873
25	Rusila S	AH&P	F	8494542
26	Surila Chandra	AH&P	F	9076820
27	Esira Baruro	Nakasi/Cautata	F	8023376



4. Group work Discussions;

In the group work, participants were divided into 3 groups of 9 people in each. The groups were given 3 questions to discuss on and these were the summary of the discussions: The following questions were discussed in the groups and this is the summary:

i) What would you wish to be done in this conservation programme?

- Identify whether feral or domesticated breeds (non-commercial breed). It was suggested that apart from indigenous pigs, there are also feral chickens present in the following islands with in Fiji should also be considered for conservation. These are important for AnGR for food and agriculture:
Lakeba, Moala, Fulaga, Vatulele, Taveuni, Koro, Gau and Viwa / Bau
- Characterisation of both phenotypic and DNA of pig and chicken breeds (preferred and un-preferable characters)
- Conduct awareness and education on the importance of conservation of indigenous pig and chicken breeds for bio-diversity and food security in the changing environment (climate change)
- Breed, multiply and distribute to interested local farmers (accessibility of breeds to wider community)
- Multiplication farm-from research station, develop and given to farmers
- Conduct training on conservation production / husbandry techniques and systems
- Sourcing indigenous breeds from representative locations throughout Fiji

ii) How do we go about making the conservation of indigenous pigs (chicken) in a sustainable way?

- Identifying farmers / farms with indigenous breeds for inter breeding cross breeding of indigenous pigs with other farms to avoid in-breeding
- Identifying farms which can be developed into multiplication indigenous pig (chicken) farms – nucleus farms
- Prevent indiscriminate slaughtering of breeding animals
- Breeding and selection of preferred traits in indigenous livestock
- Promote commercialisation of indigenous pig (chicken) breeds from nucleus indigenous pig (chicken) farms
- Promote or establish indigenous pig (chicken) farm cooperative or associations
- Promote sustainable breeding and marketing programme

iii) How do we encourage farmers to invest in indigenous pig (chicken) farming?

- Cost benefit analysis (CBA) between indigenous and commercial pig (chicken) farming systems in Fiji to determine the profitability margins
- Cheaper local feed options for indigenous pigs (chicken) over expensive imported feed for commercial breed farming
- Make bank loans easier for indigenous pig (chicken) farming - policy
- Promote indigenous livestock products for public consumption (taste, market and demand)
- Consistent market for indigenous livestock products through promotional and awareness campaign
- Access to market information system – price, availability, supply and demand.
- Provision of breeding stock to local farmers/farms

5. Participatory consultation in confirming the pig conservation site:

The workshop confirmed the pig conservation site in Fiji and this is to be sited at Koronivia Pig Research Center, Koronivia in consultation with the Ministry of Agriculture prior to the workshop. A 14- room pig

shed was constructed at the cost of FJD\$30, 000.00 at the Koronivia Research Station for the purpose of conservation of Fiji's indigenous pig breeds. This pig centre will be the main pig indigenous conservation, breeding and multiplication centre for Fiji. Breeding stock of indigenous pigs from around Fiji were collected and brought to stock the centre for breeding and distribution of offsprings to interested farmers. The following islands were visited for selection and collection and a total of 28 local pigs, both males and females, all pigs collected were quarantined and treated for internal and external parasites prior to entering them into the centre.

Pig Conservation Centre site - Koronivia Pig Research Centre

Indigenous chicken farms

The workshop participants recognised the importance of conserving indigenous breeds and requested that some indigenous chicken farms in Fiji should be supported if funds are available from this project and these farms recommended are as follow.

- a) Sigatoka Research Station - Animal Health & Production Division, Ministry of Agriculture
- b) Reddy's breeding farm - Ba
- c) Happy Chickens Farm - Sigatoka Valley Austin Bowden-Kerby

6. Conclusion

The AnGR introductory and awareness training workshops was conducted which brought together MoA staff, farmers and stakeholders to learn about the project and what it aims to achieve. The workshop was also an opportunity for people who have been involved in the industry for a long time to network, share information, ideas and tips on pig and chickens husbandry techniques and management tools and experiences especially on conservation of valuable indigenous livestock in Fiji. It is requested to note that such workshops be organised in the future.

Annex 2

Duty travel report to Niue and Cook Islands- November 2014

SPC Suva Regional Office

Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021

**SPC Headquarters**

BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Nichol Nonga and Andrew Tukana
Countries Visited	Niue and Cook Islands
Programme	AHP/LRD
Project	South West Pacific Animal Genetic Resources Project– Conservation of Indigenous pig and chicken breeds in Fiji, Niue and Cook Islands
Period	1 st – 11 November 2014
Background	<p>The “South West Pacific Animal Genetic Resources Project - Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is an AnGR project funded by FAO under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA). It is designed to promote development, conservation and utilisation of Animal Genetic Resources (AnGR) for food security through the establishment of on-farm (in-situ) conservation centres for indigenous pig and chicken breeds in these countries. These conservation, multiplication and breeding centres will be established to help conserve these breeds for future generation.</p>
Objective	<p>The objective of the visits to these countries is to collaborate with the Ministries of Agriculture and implement some of the expected outputs of the project which are;</p> <ol style="list-style-type: none">i) Establish a conserved superior local/indigenous breeding pigs for breeding in Fiji,ii) Establish a conserved population of the Niue Chicken breed,iii) Establish a conserved population of the Cook Islands chicken breediv) Breeding programmes for all three populations developed through participatory approaches.

<p>Activity Description</p>	<p>Sat 1 November 2014 Depart Suva – Nadi – Auckland</p> <ul style="list-style-type: none"> • Overnight in Auckland. <p>Sunday 2 Nov 2014</p> <ul style="list-style-type: none"> • Depart NZ to Niue and arrive Niue Saturday 1st Nov <p>Saturday 1st Nov 2014 (- 1 day)</p> <ul style="list-style-type: none"> • Checked at the Guest House • Discussed with Agriculture officials on activities for Monday and Tuesday <p>Sunday 2 Nov 2014</p> <ul style="list-style-type: none"> • Preparation of workshop presentations and other reports • Rested in Niue <p>Monday 3 Nov 2014</p> <ul style="list-style-type: none"> • Courtesy call to Director Mr. Brendon Pasisi, briefed him on the purpose of the trip. • Conduct Workshop at the R Lina’s Restaurant <ul style="list-style-type: none"> - Workshop opened by Senior Project Manager, Mr. Poi Okesene on behalf of the Director of DAFF. - 14 participants representing DAFF staff and chicken farmers attended the workshop i) Workshop presentations included the Global overview of AnGR status. ii) Implementation of the SW Pacific AnGR Pilot Project, iii) DNA and Characterization analysis results of the project, iv) New Project SW Pacific AnGR Project – conservation of pig and chicken breeds in Fiji, Niue and Cook Islands v) Participatory approach to the breeding programmes, conducted through group discussions. - On the question who to host the conservation centre? 2 options were suggested for the Director to decide: <ul style="list-style-type: none"> a) 3 existing chicken farmers to be assisted b) 1 new one to be established and to assist 3 existing ones • Field visits to 2 existing chicken farmers who are potential hosts the project. <p>Tuesday 4 Nov 2014</p> <ul style="list-style-type: none"> • Debriefing of the Director of DAFF of the activities carried out including the options of who to host the conservation centre. • Director DAFF signed the Memorandum of Understanding (MoU) between SPC and Department of Agriculture, Forestry and Fisheries on the implementation details of the project. • Discussed with Director and Senior Project Manager on the way forward for the project.
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- Visited the FAO funded Hygiene kitchen that could be used for future livestock hygiene preparation.
- Depart Niue to Auckland - arrived in Auckland Wednesday 5 Nov 2014 (+1 day)

Wednesday 5 Nov 2014

- Overnight in Auckland

Thursday 6 Nov 2014

- Depart Auckland – Rarotonga

Wednesday 5 Nov 2014 (- 1 day)

- Arrive Rarotonga 13:45pm
- Checked in at Central Motel
- Briefed Director of Livestock Dept. on the agenda and the activities planned next days.

Thursday 6 Nov 2014

- Courtesy call to the Secretary of Ministry Agriculture, Dr, Mat Porea and briefed him on the objectives of the visit.
- Introductory Workshop conducted:
 - Workshop was opened by Secretary of Ministry Agriculture
 - 13 participants representing students at the Takamoa Theological College and local farmers attended the workshop.
 - Workshop presentations covered
 - i) Global overview of AnGR Status,
 - ii) the SW Pacific AnGR Pilot Project and the results of the DNA characterization analysis of the project,
 - iii) the New Project SW Pacific AnGR Project – conservation of pig and chicken breeds in Fiji, Niue and Cook Islands
 - iv) Participatory approach to the implementation of the new project including the breeding programmes,
 - v) Select a host farmer to the conservation project.
 - A host institution has already been selected for hosting the Chicken Conservation centre. The host will be the Cook Islands Church Theological College, Takamoa College.

Friday 7 Nov 2014

- Met with the Secretary to sign the Memorandum of Understanding between The Government of Cook Islands and the Secretariat of the Pacific Community.
- Went around the many local chicken farmers to collect dried blood samples on FTA cards for DNA analysis. Visited five local owners around the island of Avarua and since most chickens were free-range it was difficult to catch them.
Collected 7 chicken samples today

Saturday 8 Nov 2014

- Went early again to some chickens owners who have promised to catch

	<p>some for the next day.</p> <ul style="list-style-type: none"> • Able to collect 5 samples from one farmer today and the rest they did not catch any for us. <p>Sunday 9 Nov 2014</p> <ul style="list-style-type: none"> • Rest and duty report writing <p>Monday 10 Nov 2014</p> <ul style="list-style-type: none"> • Depart Cook Islands – Auckland (arrived Tuesday 11 Nov 2014) • Transit in Auckland (Tuesday 11 Nov 2014) – Nadi – Suva
<p>Why Activity Important</p>	<p>The conservation and of biodiversity of which Animal Genetic Resources (AnGR) is an important activity for every country. This activity is important in that in this project we are trying to conserve genetic resources which are important for food security and livelihood especially in the face of threats such as climate change impacts, natural disasters and other threats which would bring extinction to these valuable and irreplaceable resources. AnGR are livestock which are essential for the provision of meat, milk, eggs, hides, power and companionship, Without these the world would be poorer.</p> <p>Therefore these activities in which conservation is the main target is essential to conserve and maintain these resources from being lost to extinction.</p>
<p>Who Benefits/ stands to benefit from Activity</p>	<p>The government and the people of these countries would benefit initially but not only them but also the people of the Pacific Region. The world in fact would benefit because animal breeders would have diverse breeds to use for breeding for future use in the indigenous chickens . Donors and funding agencies would benefit from the centres. Researchers and breeders would benefit also.</p>
<p>Activities established</p>	<p>a) Animal Genetic Resources Conservation Project introductory workshops conducted in Niue and the Cook Islands – Niue – 14 participants attended, Cook Islands – 13 participants attended.</p> <p>b) Hosts to the conservation projects have been selected in the Cook Islands and Niue.</p> <p>c) Visited the selected sites and confirmed with owners our commitment to establish these centres</p> <p>d) Signed the MoUs between the countries and SPC for the establishment of the AnGR conservation centres</p> <p>e) Discussed with Ministry and Department’s officers on various issues that need advice and assistance by SPC. These are i) Discussion on the possibility of SPC to Assist Niue on how to carry out Artificial Insemination (AI), ii) Disease Risk Assessment on an elephant planned to be quarantined in Niue for the Auckland Zoo for 3 months.</p>

<p>Problems</p>	<p>Some of the problems we encountered which may need to be considered for future travels:</p> <p>a) Excess luggage - Air New Zealand accepts 1 piece of luggage per passenger and any extra piece would be charged NZ\$120 /piece. Not aware of this and we were charged for 2 extra pieces of materials for the project activities which proved to be expensive</p> <p>b) Collection of chicken blood samples in Cook Islands was difficult due to the free-range system used for the chickens, hard to catch.</p>
<p>Follow up</p>	<p>Need to follow up on:</p> <p>i) Final selection of host farmers in Niue.</p> <p>ii) Building plans, invoices of materials and other requirements to build the facilities and to stock local chickens.</p> <p>iii) Local accounts whereby funds from SPC can be sent to for the ministry to purchase the materials.</p> <p>iv) Regular contacts with Ministry to monitor progress of activities.</p>
<p>Acknowledgement</p>	<p>We would like to thank the following people:</p> <ul style="list-style-type: none"> • The Director of DAFF, Mr. Brendon Pasisi, Project Manager, Mr. Poi Okesene and other senior staff of the DAFF in Niue for making the trip successful • Thank Secretary of MoA, Dr. Mat Porea, Director of Livestock Mr. Tiria Rere and other senior staff of the Ministry of Agriculture
<p>Pictures of Nurseries and chicken sheds established</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Participants in Niue</p> </div> <div style="text-align: center;">  <p>Workshop participants in Cook Is.</p> </div> </div>

ANNEX 3

Duty travel to Niue June 2015

SPC Suva Regional Office

Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021

**SPC Headquarters**

BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Mr. Nichol Nonga, Animal Production Officer (Training, Research Development) Mr. Andrew Tukana (Research and Extension)
Countries Visited	Niue
Programme	AHP/LRD
Project	‘ South West Pacific Animal Genetic Resources Project– Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands ‘
Period	16 – 25 June 2015
Background	<p>The “South West Pacific Animal Genetic Resources Project - Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is an AnGR project funded by FAO under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA).</p> <p>The above mentioned conservation project follows on from the previous South West Pacific AnGR Pilot Inventory, Characterisation Pilot Project. The results of the DNA analysis conducted on pig and chickens breeds from Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu in 2008 – 2011, showed that the pig and chicken breeds of these countries are very unique with Niue local chicken breed being the most unique of all the populations and thus effort to conserve these unique breeds in the three countries Fiji, Niue and Cook Islands.</p> <p>These establishments are designed to develop, conserve and utilise these unique pig and chicken breeds through on-farm (in-situ) sites for future breeding and food security. These unique pig and chicken breeds will be collected from all over the participating countries into breeding and multiplication centres as a means of conservation measure</p> <p>In Niue the plan is to utilise 3 existing chicken farms into breeding and conserving the unique Niuean chicken breed and produce resilient and</p>

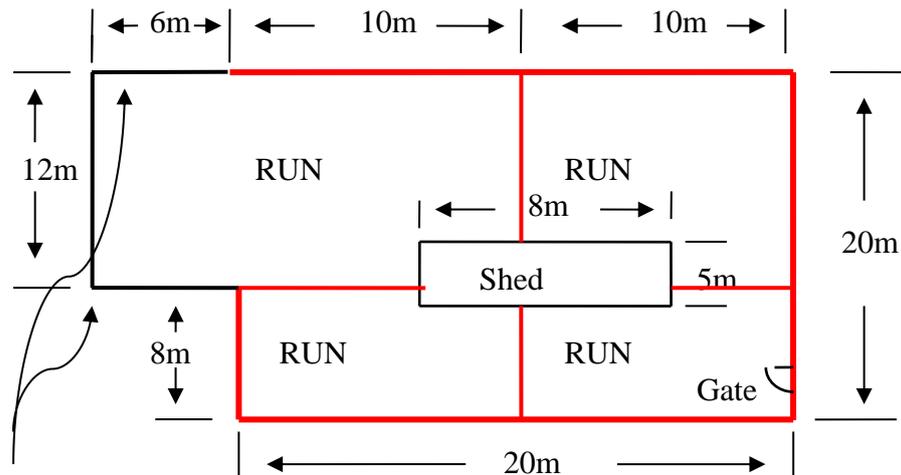
	<p>adapted breeds against climate change impacts for food security. For sustainability, the chicken farms are to be operated in a semi-commercial manner where income generation is paramount.</p>
<p>Objective</p>	<p>The objective of the visit to Niue was to collaborate with the Department of Agriculture, Forestry and Fisheries (DAFF) staff and farmers to build capacity in the 3 host farms to be able to breed and conserve chickens and achieving the following outputs of the AnGR Conservation project:</p> <ul style="list-style-type: none"> i) Construct and renovate 3 chicken fences, sheds including nest boxes, feeders, and waterers to raise indigenous chickens for breeding, conservation and production. ii) Select and collect healthy local chickens from other sources (villages and areas) for breeding in the farms. iii) Other important activities and duties as may be requested of SPC from the host government whilst in Niue.
<p>Activity Description</p>	<p>Tuesday 16 June 2015</p> <ul style="list-style-type: none"> • Depart Suva - Nadi - Auckland • Overnight in Auckland. <p>Wednesday 17 June 2015</p> <ul style="list-style-type: none"> • Depart Auckland, NZ 9:20am arrive Niue Tuesday 1:30pm 16 June 2015 <p>Tuesday 16 June 2015</p> <ul style="list-style-type: none"> • Arrive Niue 1:30pm • Met by Mr. Poi Okesene at the airport with a hire car for us to use. • Checked in at Bella's Guest House, Alofi • Brief discussion with Poi Okesene on agenda and objectives of the trip at the Guest House <p>Wednesday 17 June 2015</p> <ul style="list-style-type: none"> • Wednesday was a wet and windy day with heavy rains and strong winds, so it was hard to visit and assess the farms on what need to be done. • Made a courtesy call to the Director of DAFF, Mr. Brendon Pasisi but he was out and so we had the consultation with Mr. Poi Okesene, Senior Research Technical Manager on the agenda of the week. • Mr. Okesene checked with BJ Hardware if the payment for the chicken fence materials had come through (sent for SPC Finance on Monday 15 June). The Hardware advised that the payment had come through. They advised that they could not deliver the materials due to materials out of stock but further advised that the boat from New Zealand is arriving Monday 22 June when the materials i.e. timbers and rolls of chicken wire mesh would arrive. • Worked at the internet café.

Thursday 18 June 2015

- Visited the 3 host farms with the Senior Research Technical Manager, Mr. Okesene, to meet the farmers and assess the conditions of the farms on what renovations work need to be done. The following assessments on each farm were:

i) Leo Pita's farm. Leo was at his farm to meet us and helped us assess his farm: *Coordinates - S 18° 58.699', W169° 52.257'*

Sketch plan - *Leo Pita's existing chicken fence*



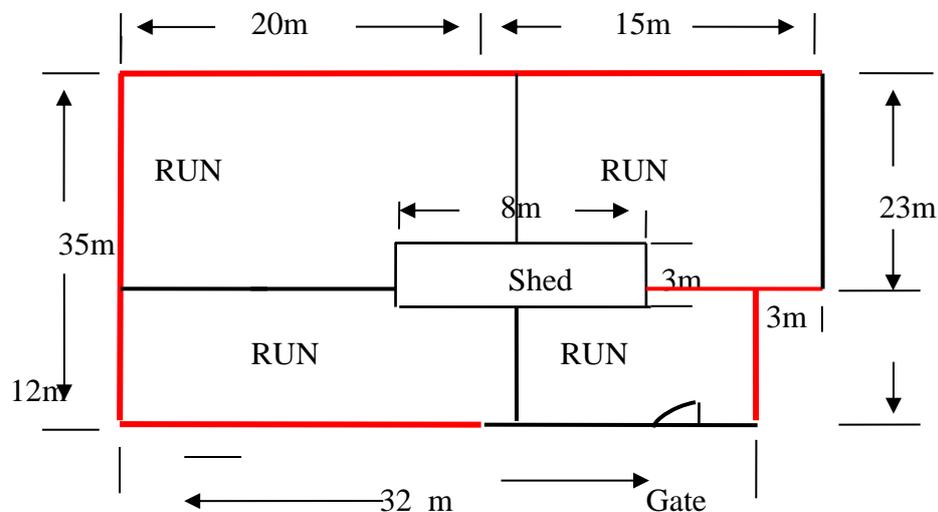
New extension
fence

- Generally, the farm badly needs clearing of weeds and creepers along the fence lines, cleaning of rubbish inside and outside the fence.
- Perimeter and dividing fences need new wire mesh (—) as they are old and rusting,
- Posts – some are still strong and can be retained while others will have to be replaced.
- Shed – the shed is still good and strong but will need to have wire mesh fenced around it.
 - The owner wants to extend the shed to include a brooder part;
 - Need to convince the farmer to use nest boxes as the owner does not want to use nest boxes and happy with chickens laying on the floor.
- Need new nest boxes, need darker area to promote laying,
- The floor of the shed need to have some form of litter to absorb manure and water recommended shredded plants and leaves as there are no wood shavings or saw dust in Niue.
- Production parameters
 - 20 local chickens (hens roosters and young ones)
 - 40 hybrid layers in the pen.
 - Both breeds producing eggs at 50% rate
 - Feeding them grower mesh feed, local feed such as coconuts, green leaves and kitchen left-overs.

- Recommend all local chickens to have wing feathers trimmed to prevent them from flying over the fences as is happening now.
- Leo complains of birds (owls or eagles) predated on his local chickens especially the young ones
- Most of the materials needed to complete the renovations have been placed in the order purchased from the Hardware supplier.

ii) **Sam Makatogia Farm, Mutalau Village** - Sam was unable to meet us at the farm as he was sick, we had to visit him at his home and got his permission to enter his chicken farm and conducted an assessment:

Sketch: *Sam Makatogia existing chicken fence plan*
 Coordinates : *S 18° 58.274', W169 50.068'*



- The general condition of the fence surroundings was not too bad. It was clean and up-kept.
- Perimeter fence and dividing fences – part of the perimeter and dividing fences need to have new mesh wire to be erected (marked) —
- Posts - some posts are still strong to be retained but others have to be replaced.
- Shed - the shed has to be completely divided in to 2 parts, one part for the hybrid layers and the other for the indigenous chickens
- A door has to be created at the local chicken side of the shed similar to the hybrid layers side to allow chickens in and out of the shed.
- Need extra new nest boxes and darken the side of the nest boxes to encourage hens to lay
- The shed floor to be filled with deep litter but since there is not wood shavings and sawdust in Niue we recommend dried shredded plants and leaves and or shredded paper.
- Chicken population
 - Hybrid layers - 50 layers (3 year old – too old for production)

- Local chickens – about 20 but most of them were out of the fence as they fly in and out of the fence (potential to keep 60-80 chickens).
- Feed – Grower feed is being used with local feed such as coconuts, green leaves, left-over feed from kitchen etc.
- Too many trees in and around the fence. Need to fell or trim trees to allow more sunlight into the yard for plants to grow for the chickens to browse.
- Most of the materials required for renovations have been ordered and purchased from the hardware supplier.
- Spent time with the farmers advising them tips on chicken husbandry, management and production techniques.

Friday 19 June 2015

- Friday is a public service non-working day thus we had to do the tasks by ourselves
- Visited BJ Hardware to check on the materials. The company agreed to deliver the materials to the owner's farms. Again we were told that many of the materials required are not available and that all would be arriving on Monday when the boat from New Zealand arrives.
- Made another visit to Leo Pita and Sam Makatogia farms to check on the local chickens in the fence and to sketch the layout of the fences and to take measurements. Found that most of the local chickens had flown out of the fence and were running outside the fence, the wing feathers need to be trimmed. Also collected GPS coordinates for our reports and GIS mapping.
- Made a brief visit to the elephant (Anjalee) quarantine site to look at the quarantine facility as the elephant was leaving Niue the next day. We were told that the elephant had grown and had increased by 100kg over the 3 months in quarantine.

Saturday 20 June 2015

- Witnessed the loading of "Anjalee" the elephant in a NZ Army Hercules plane on her way to Auckland Zoo, after 3 months in quarantine isolation in Niue. She was loaded in a huge crate and loaded in the plane and was taken to NZ.
- Took GPS coordinates readings of the 12 main villages around Niue including Alofi town. These will be useful in developing GIS mapping and to determine the local chickens' normal free range environments and where to collect chickens to put in the farms.

iii) Tom Misikea Farm, Hakupu Village - Visited Tom's farm today. Tom Misikea is a retired public servant since 2014. He was the DAFF officer in-charge of building the farmers' chickens fences around Niue during his time with the Department.

- Tom's farm was completely run-down and will need full renovations to put it back to order to secure chickens inside. The old

perimeter and dividing fences are down with wire mesh rusty, posts old, rotting and loose. At the time of the visit, Tom was sick with flu but has assured us that as soon as the materials arrived he will start the repairs and renovations within July 2015. He plans to have 60 – 80 local chickens in the fence

- He had listed down the materials required for the full work and has been purchased and to be delivered by BJ Hardware.

Sunday 21 June 2015

- Writing duty travel report and other reports
- Complete work plan and timelines for Niue DAFF staff and farmers to complete renovations and construction of chicken facilities
- Rest

Monday 22 June 2015

- The boat carrying the materials arrived this morning from NZ.
- Had debriefing consultation with Director, Mr. Brendon Pasisi and Senior Research Technical Manager, Mr. Poi Okesene. We made clear to the Director that we were unable to complete the renovations of the fences due to materials not available at the Hardware supplier. The materials have now arrived in the boat from New Zealand but still would take a few more days to be cleared from Customs.
- Emphasized to the Director and Senior Technical Research Manager the urgency of getting the renovations on the farms completed as soon as possible, by end of July 2015. Urged DAFF to lead the tasks.
- They assured us that since the materials are purchased and available, the Department will make it their responsibility to get the renovations completed within July 2015.
- Left money (NZ\$820.00) with the DAFF to purchase 70 -80 local chickens to increase stock in the 3 farms. DAFF staffs are tasked to source and select breeding chickens from other villages and areas as far as possible from the conservation sites to prevent same breed lines and in-breeding.
- Recommended to DAFF that-
 - All local chickens in the pens to have one side of their wing feathers trimmed to limit flight over the fences (Niue local chickens can fly like birds).
 - Treat all chickens for intestinal parasites with medication.

Biogas Digester

The Director, DAFF made a request to SPC to assist them establish a biogas digester at the government Waipapahi Research Station Piggery. We agreed to assist. We will be initially providing DAFF with some simple, cheaper designs for them to consider. If approved and accepted then we would help to supervise construction and establish the digesters at the station.

	<p>On this, we visited the Waipapahi Research Farm and assessed the site, took note of the number and size of pens, number of pigs present and what size would be appropriate for the farm.</p> <p>Tuesday 23 June 2015</p> <ul style="list-style-type: none"> • A final debriefing consultation with Poi Okesene at Poi’s office. We once again emphasized the importance and urgency of getting the renovations completed by end of July 2015. Poi had assured that as soon as he returned from the meeting in Nadi, he will work start work on completing the renovations. <p>He has also assured us that he will select and collect the local chickens to increase stock into the pens.</p> <ul style="list-style-type: none"> • Designed signage boards writings for the 3 farms for visibility • On the Biogas Digester - Advised Mr. Okesene that we have made an assessment of the research piggery and promised to send them some designs for their consideration. • Left Niue 2:40pm – arrived Auckland Wednesday 23 June 2015 <p>Wednesday 24 June 2015</p> <ul style="list-style-type: none"> • Arrived Auckland 17:30pm • Overnight Auckland <p>Thursday 25 June 2015</p> <ul style="list-style-type: none"> • Left Auckland 20:15 – Nadi 23:30 (overnight in Nadi due to flight changes) <p>Friday 26 June 2015</p> <ul style="list-style-type: none"> • Left Nadi 06:15 to Suva 06:40 early morning
<p>Why Activity Important</p>	<p>This activity of collecting, breeding and conserving local chickens is important for food security and livelihood. Conservation is the prime target and it is essential to conserve and maintain these valuable resources from being lost to extinction.</p> <p>It is also very important for SPC/LRD that these conservation activities are completed and operational prior to the convening of the CRGA meeting to be held in Niue in Oct – Nov 2015. These centres will be part of the show during the meeting to show case FAO/SPC AnGR conservation of the Niue unique chicken breed. It will be an opportunity to show to the government representatives the importance of conserving such indigenous breeds for biodiversity and future food security.</p>
<p>Who Benefits/ stands to benefit from Activity</p>	<p>The government and the people of Niue and the region would benefit from the activities of the project by conserving this unique breed of chickens. Donors, researchers, livestock companies and livestock breeders would benefit also from the project.</p>

<p>Activities established</p>	<ul style="list-style-type: none"> i) Discussion and concession with the DAFF senior management staff on assessments on renovations, time lines and delivery of materials for the work to be completed. ii) Collected GPS coordinates of all major villages around Niue for future references with regards to sourcing local chickens and for GIS mapping iii) Spent time with farmers giving them husbandry and management tips on how to raise chickens. iv) Purchased local chickens to be shared among the 3 farms to increase population with the conservation sites v) Arrange 3 signage boards for each of the farms for visibility. vi) Purchased chicken feed bags for the farmers to feed the chickens vii) Purchase extra materials for Sam for his pen viii) Conduct initial assessment on the Waipapahi Research Station Piggery to establish biogas digester.
<p>Problems</p>	<p>Encountered some problems which had limited our work:</p> <ul style="list-style-type: none"> a) Although the payment for the materials was confirmed received from SPC Finance on Thursday, the supplier did not have all the materials required in stock. b) Renovation work on the fences was halted due to unavailability of materials that were essential for the work to be done. c) Although the boat carrying the materials arrived on Monday morning it will take a few more days to get all the materials cleared from Customs and by the time we would have left.
<p>Follow up</p>	<p>Some urgent work to be followed up in Niue.</p> <ul style="list-style-type: none"> a) Urgent to do another trip to Niue to ensure that the renovations work on fences, sheds and production items in the farms are completed, ready with breeding operational for at least 3 months prior to the CRGA meeting. b) Local chickens (roosters and hens) to be selected, purchased, collected from distant villages to the sites, and treated for parasites and wing feathers trimmed to limit them from flying over the fences. c) Purchase compound feed and local feed stuff for the chickens. d) Continue to train farmers on proper chicken husbandry, management and practical skills, simple business operation and record keeping to improve production. e) Biogas digester designs with list of materials and costs are sent to DAFF, Niue for their consideration. If approved, accepted and funded then AHP/LRD technical staff would be available to supervise the establishment the biogas digester.

Pictures in Niue

AnGR Chicken Conservation farms - Niue



Sam's chicken fences



Leo Pita's farm s/potatoes



Nest boxes at Tom's farm



Nest boxes at Tom's farm



Free range indigenous chickens in Niue

ANNEX 4

Duty travel to Niue July - August 2015

SPC Suva Regional Office
Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021



SPC Headquarters
BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Nichol Nonga, Animal Production Officer (Training, Research Development) Andrew Tukana, Animal Production Officer (Extension and Research)
Countries Visited	Niue
Programme	AHP/LRD
Project	South West Pacific Animal Genetic Resources – Conservation of Indigenous pig and chicken breeds in Fiji, Niue and Cook Islands
Period	27 July – 4 August 2015
Background	The “South West Pacific Animal Genetic Resources Project - Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is an AnGR project funded by FAO under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA). The project is designed to promote development, conservation and utilisation of Animal Genetic Resources (AnGR) for food security through the establishment of on-farm (in-situ) conservation centres for indigenous pig and chicken breeds in these countries. These conservation, multiplication and breeding centres will be established to help conserve these breeds for future generation.
Objective	The objective of the visit was to progress the implementation of the AnGR indigenous chicken conservation and multiplication activities and establish conserved populations of the Niue Chicken breed. The trip was to try and accomplish some of the activities as per work plan (attached) i) Renovate perimeter and dividing fences, putting up new posts, stripping old mesh and replace with new mesh wire, repairs of fence gates. ii) Fell trees and trim branches to allow more sunlight into the fences

	<p>for grasses to grow.</p> <p>iii) Renovations of 3 chicken sheds</p> <p>iv) Signage purchased</p> <p>v) Other materials purchased and delivered to sites</p>
<p>Activity Description</p>	<p>Monday 27 July 2015 Depart Suva – Nadi Overnight in Nadi</p> <p>Tuesday 28 July 2015</p> <ul style="list-style-type: none"> • Depart Nadi – Auckland <p>Wednesday 29 July 2015</p> <ul style="list-style-type: none"> • Depart Auckland – Niue (arrived 1:30pm Tuesday 28 July) <p>Tuesday 28 July 2015 (Niue time)</p> <ul style="list-style-type: none"> • Checked at the Taloa Heights house • Had briefing with Senior Technical Research Manager, Mr. Poi Okesene on the objectives of the trip. <p>Wednesday 29 July</p> <ul style="list-style-type: none"> • Made a brief courtesy call to the Department of Agriculture to the Director DAFF, Mr. Brendon Pasisi and Senior Technical Research Manager, Mr. Poi Okesene to brief them on the objective of the visit. • Paid the \$1,500.00 for the 3 signage ordered for the 3 sites <p>Leo Pita Farm -, 3 staff from DAFF joined us to work on renovating and fixing Mr. Leo Pita’s chicken farm. The owner of the farm Mr. Leo Pita was not present as he had gone to New Zealand for 2 weeks so his son Mr. Chamberlain came on his behalf to help us.</p> <ul style="list-style-type: none"> • Noticed that a dog had gone through the fence and had taken a layer hen and eaten it outside the fence • Recommended to the owner’s son (Chamberlain) to install corrugated iron at the bottom of the fences to prevent dogs to dig under the fence to get in the fence. • Brushed and cleared the fence lines and the fence area which were covered by creepers and weeds • Loaded many truck- loads of household rubbish and other rubbish that were strewn in and around the fence to the rubbish tip. • Dug up banana plants, removed weeds, coconut trees and other plants along and within the fence. • Strip old mesh wire and replaced with new one <p>Sam Makatogia Farm – After having cleared part of Leo’s fence we then went to Sam Makatogia’s farm in the afternoon. The team was told that Sam had also gone away to New Zealand and so we just have to do what is needed to be done at his farm. The team;</p> <ul style="list-style-type: none"> • Cleared the fence lines from creepers and bush • Picked and cleaned rubbish inside and outside of the fence

- Identified posts and fences to be removed and replaced.
- Felled trees that were standing along the fence lines damaging and pulling down the fences

Thursday 30 July 2015

Continue work on Leo Pita's farm -

- Purchased some tools for working (2 bush knives, 1 file) for brushing and cleaning
- Paid a load of aggregates and sand and delivered to the site from the crushing factory to firm up posts.
- Continue brushing and cleaning of one section of a pen which was overgrown with weeds (blue rats' tail).
- Dug holes for the posts to strengthen the perimeter fence and dividing fences
- Mixed concrete to strengthen the posts and put up the posts

Tom Misikea Farm - After having done work at Leo Pita's and Sam's farms we then went to check on Tom's farm. We found that Tom had started working on renovating the old fence:

- Found the fence to be in good condition as the posts were still strong and just need some re-straining of the wires
- Tom had cleared the fence from bushes and burned the bottoms of trees that were shading the fence.
- Cleaned the shed floors and getting the old litter to the vegetable plot for composting
- Tom had put in several posts that needed replacing and only need to re-strain the wires to strengthen the fence

Friday 31 July 2015

Friday is not a working day for Public servants in Niue so DAFF staff did not accompany us to the farms. So it was just Andrew and I working on the farms today.

- Visited hardware stores to get invoices for chicken drinkers, feeders and chicken feed

Leo Pita's farm –

- Checked on the posts put up yesterday for firmness and strength to ensure the wire can be strained and nailed onto the posts.
- Continued cleaning rubbish and weeds

Sam's Farm –

- Took out the old rotting posts at Sam's fence
- Cleaned the rubbish inside and outside the fence
- Checked the shed and cleaned out the old rubbish within the shed floor

Saturday 1 August 2015

Sam's farm

- Continue to cut and trim trees growing over the fences and over shading the fence
- Marking the sites for the new posts at Sam's fence
- Checked on the number of local chickens in the fence
- Assessed Leo's farm to ensure that the fence is strong and that dogs and

	<p>other chicken predators do not enter the fence through the wires</p> <p>Sunday 2 August 2015</p> <ul style="list-style-type: none"> • Rest <p>Monday 3 August 2015</p> <ul style="list-style-type: none"> • Loaded aggregates and sand into a DAFF truck from Leo's farm to Sam's farm • Picked up posts and cement bags at Sam's home to take the farm • Dug holes (rocky soil, very difficult to dig) • Mix cement for the posts • Set posts into the holes and cemented the bottoms for strength • Strain wires on to the posts <p>Tuesday 4 August 2015</p> <ul style="list-style-type: none"> • Purchased another 50 local chickens @ NZ\$10.00 each for the 3 farms through DAFF (\$500.00). These are yet to be delivered. • Collected receipts for other items purchased at the DAFF office • Refilled the hired vehicle of fuel • Debriefing with Senior Research Technical Manager, Mr. Poi Okesene • Requested DAFF to quickly complete all the renovations of the 3 farms and get the chickens into the fence for production as soon as possible. • Depart Niue 2:45 – arrive Auckland 5:35 (Wednesday 5 August) <p>Wednesday 5 August 2015</p> <ul style="list-style-type: none"> • Overnight in Auckland <p>Thursday 6 August 2015</p> <ul style="list-style-type: none"> • Left Auckland 12:55 – Nadi 16:00 • Nadi 18:00 - Suva 18:30
<p>Why Activity Important</p>	<p>The conservation of biodiversity in genetic resources of indigenous chickens is an important activity for food security especially in the face of threats such as climate change impacts, natural disasters and other threats which would bring extinction to these valuable and irreplaceable resources. The activities are essential to conserving and maintaining these resources from being lost to extinction. Also essential to be completed before the CRGA meeting in Niue in Nov 2015.</p>
<p>Who Benefits/ stands to benefit from Activity</p>	<p>The government and the people of Niue would benefit initially. Animal breeders, donors and funding agencies and researchers would also benefit from the centres.</p>
<p>Activities established</p>	<p>The following activities have been established or done during this trip</p> <ul style="list-style-type: none"> • All materials purchased during the previous trip have now been delivered to the 3 farms • Completed clearing of bush and cleaning of rubbish around the fences and taking all the rubbish to the tip at Leo, Sam and Tom • Digging holes for posts at Leo and Sam farms • Putting up posts to strengthen the fences in all 3 fences • Purchase gravel and sand for all farms to do renovations in fences • Strengthen wires in all fences • Purchased 150 local chickens to stock 3 farms but awaiting completion of farms.

Problems	<p>Some of the problems we encountered in carrying out these activities include:</p> <ul style="list-style-type: none"> • No tools of our own to do the jobs. We rely on owners and the DAFF staff to provide tools such as crow bars, knives, shovels and spades, saws and hammers, wheel barrows etc, so when they are not present we could not carryout these jobs. • The owners were away overseas so it was difficult to tell them exactly what we wanted done.
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Follow up	<p>The following activities need to be followed up:</p> <ul style="list-style-type: none"> • Completion and strengthen all fences in the farms to stock chickens • Collection of chickens from villages to take to the farms • Treating of internal parasites of chickens • Completion of nest boxes in farms • Production to start as soon as possible • Recording of daily activities to be followed up with farmers
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Pictures of Nurseries and chicken sheds established	 <p><i>Cleaning and brushing fence Brushing around the chicken fence lines</i></p>
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Loading sand & gravel and putting up posts

ANNEX 5

Duty travel to Niue – October 2015

SPC Suva Regional Office
Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021



SPC Headquarters
BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Nichol Nonga, Animal Production Officer (Training Research Development) Andrew Tukana, Animal Production Officer, (Research & Extension)
Countries Visited	Niue
Programme	SO2 and SO4
Project	South West Pacific Animal Genetic Resources – Conservation of Indigenous pig and chicken breeds in Fiji, Niue and Cook Islands
Period	13 – 22 Oct 2015
Background	The “South West Pacific Animal Genetic Resources Project - Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is an Animal biodiversity FAO funded project under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA). It is designed to promote development, conservation and utilisation of animal genetic resources (AnGR) for food security through the establishment of on-farm (in-situ) conservation centres for indigenous pig and chicken breeds in these countries. These conservation, multiplication and breeding centres are established to help conserve these breeds for future generation’s use.
Objective	The trip was to try and accomplish some of the activities as per work plan (attached) i) Renovate perimeter and dividing fences, putting up new posts, stripping old mesh and replace with new mesh wire, repairs of fence gates. ii) Fell trees and trim branches to allow more sunlight into the fences for grasses to grow. iii) Renovations of 3 chicken sheds

	<p>iv) Signage purchased v) Other materials purchased and delivered to sites</p>
<p>Activity Description</p>	<p>Tuesday 13 October 2015 Depart Suva – Nadi - Auckland Overnight in Auckland</p> <p>Wednesday 14 October 2015</p> <ul style="list-style-type: none"> • Depart Auckland – Niue (Tuesday 13) <p>Tuesday 13 October 2015</p> <ul style="list-style-type: none"> • Arrive Niue - a Public Holiday in Niue (ANZAC Day) • Checked in at the Hakupu cottage • Visited 3 farms and to assess what progress had been achieved <p>Wednesday 14 October 2015</p> <ul style="list-style-type: none"> • A courtesy call to Director DAFF, Mr. Brendon Pasisi and Senior Technical Research Manager, Mr. Poi Okesene to brief them on the objective of this visit. • Readjusted work plan of activities at the chicken farms. • All farms had been renovated with wires erected and fences ready to accept equipment and chickens to start breeding • Visited Hardware store to get invoices for tools and feed <p>Thursday 15 October 2015</p> <ul style="list-style-type: none"> • Only one DAFF staff could join us today as most have the ‘Invasive Species Officer’ from SPREP to work with. • Bought tools, nails, screws, hinges and timber from the hardware store for work at the site • Installed the signage boards at the entrances to the three sites. • At Tom’s farm - fixed the main gate to the farm, cleaned the inside of the shed, arranged nest boxes ready for the chickens to be brought in. • Installed drinkers and feeders at Tom’s pens, filled the drinkers and feeders <p>Friday 16 October 2015 A non-working day for Niue Public servants.</p> <ul style="list-style-type: none"> • Purchased 4 bags of feed and delivered to farmers • Accompanied Poi Okesene to go around the villages purchasing and collecting local chickens from local villagers to stock the 3 conservation farms. Collected 30 chickens from the villages and divided those to Tom (17) and Leo (13). • Prior to introducing the chickens into the farms, we trimmed their primary feathers on both wings to reduce their ability to fly in and out of the fences. • Filled the feeders with feed and drinkers with water • Chickens were introduced late in the evening to reduce them fighting. Chickens fight to establish pecking order when being congregated for the first time especially from different sources. Best time to introduce other chickens into the current population is at night so they do not see who is new. <p>Saturday 17 October 2015</p> <ul style="list-style-type: none"> • Joined the Niue World Food Day at the Niue Show Ground

	<ul style="list-style-type: none"> • Collected another 2 bags of feed and delivered to Leo’s farm • Checked the chickens at Leo’s farm to ensure that they do not fight each other especially the roosters. • Installed equipment (feeders and drinkers) at Leo’s farm <p>Sunday 18 October 2015</p> <ul style="list-style-type: none"> • Rested <p>Monday 19 October 2015 Another Public Holiday in Niue (Constitution Day)</p> <ul style="list-style-type: none"> • Purchased 2 more feed bags for Sam’s farm • Checked the chickens at Leo’s farm to ensure that the chickens are not fighting • Helped Leo and family to fix some renovations at the farm and installed two more feeders and drinkers • Installed 5 feeders and 5 drinkers at Sam’s farm, filled water into the drinkers • Blocking bottom of wire fences to stop chickens going out under the fence. <p>Tuesday 20 October 2015</p> <ul style="list-style-type: none"> • Made a last check on the farms before we leave today • Bought 12 bags of feed for DAFF staff to collect and deliver at the farms • Debrief at the DAFF office with Poi Okesene • Left Niue to travel to Auckland (arrive Akld – Wednesday) <p>Wednesday 21 October 2015</p> <ul style="list-style-type: none"> • Arrived Auckland (Wednesday 5 October) • Overnight in Auckland <p>Thursday 22 October 2015</p> <ul style="list-style-type: none"> • Left Auckland 12:55 – arrived Nadi 16:00 • Nadi 18:00 - Suva 18:30
<p>Why Activity Important</p>	<p>The conservation of biodiversity in genetic resources of indigenous chickens is an important activity for food security especially in the face of threats such as climate change impacts, natural disasters and other threats which would bring extinction to these valuable and irreplaceable resources. The activities are essential to conserving and maintaining these resources from being lost to extinction. Essential to complete renovations and stocking prior to the CRGA meeting in Nov 2015.</p>
<p>Who Benefits/stands to benefit from Activity</p>	<p>The government and the people of Niue benefit initially. The region in fact benefit because animal breeders would have diverse breeds to use for breeding and for future use in the indigenous chickens. Donors and funding agencies and researchers would also benefit from the centres.</p>

<p>Activities established</p>	<p>The following activities have been established or completed during this trip</p> <ul style="list-style-type: none"> • 3 x fence sites renovated with 16 posts put up, 100 x metres wire mesh erected in 3 sites, 1 shed extended and 2 x 15m x 5m sheds renovated, 1 gate repaired and installed • Equipment installed -15 x drinkers, 15 x feeders. • Tom Misikea's shed cleaned and prepared for accommodating chickens • 3 signage boards installed in 3 sites. • 100 x indigenous chickens purchased, 40 x chickens collected (60 to be collected) wing feathers trimmed and put in the sheds. • 18 x 25kg bags compound feed purchased and delivered to farmers, imported feed from NZ. The imported feed will only be used as supplements to the local feed ingredients for daily feeding e.g. coconuts, green leaves, kitchen scraps, chickens also are to graze vegetation within the limits of the fence. • Talked to farmers (Leo Pita and family, Tom Misikea and Sam Makatogia) on husbandry techniques and management aspects of chickens.
<p>Problems</p>	<p>Some problems encountered in carrying out these activities include:</p> <ul style="list-style-type: none"> • Too many public holidays - thus hard to get staff to progress work • No tools of our own to do the jobs. Relying on owners and the DAFF staff to provide tools such as crow bars, knives, shovels and spades, saws and hammers, wheel barrows etc., so when they are not present, it is difficult to progress jobs.
<p>Follow up</p>	<p>Most of the activities have been completed except for;</p> <ul style="list-style-type: none"> • 60 x chickens yet to be collected and delivered to stock fences. The shortage was due to farmers difficulties in catching free –range chickens. • Get production going and increase populations • Help to organize marketing outlets for farmers • The UNDP/G77 project (“Promotion of indigenous pigs and chickens through marketing and consumption”) will provide other materials for production and marketing e.g. egg trays as its contribution to marketing. • Recording sheets installed (this is being developed)
<p>Pictures of conservation establishments</p>	



Newly renovated pen – Sam Makatogia – Mutulau Village



Signage installed



Inside shed– Tom Misikea, Hakupu



Installing signage board – Leo



Help renovating chicken shed - Leo



Leo Pita – chickens inside pen



Utilising manure to grow vegetable



Trimming chicken primary wing feathers to limit flight ability

ANNEX 6

Duty travel report to Cook Islands – November 2015

SPC Suva Regional Office
Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021



SPC Headquarters
BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Andrew Tukana
Countries Visited	Cook Islands
Programme	SO4, SO1, SO2
Project	South West Pacific Animal Genetic Resources – Conservation of Indigenous pig and chicken breeds in Fiji, Niue and Cook Islands
Period	10 – 15 November 2015
Background	<p>The “South West Pacific Animal Genetic Resources Project - Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is an AnGR project funded by FAO under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA). The project is designed to promote development, conservation and utilisation of Animal Genetic Resources (AnGR) for food security through the establishment of on-farm (in-situ) conservation centres for indigenous pig and chicken breeds in these countries. These conservation, multiplication and breeding centres will be established to help conserve these breeds for future generation.</p>
Objective	<p>The objective of the visit was to progress the implementation of the AnGR indigenous chicken conservation and multiplication activities and establish conserved populations of the Cook Islands Chicken breed. The trip was to try and accomplish some of the activities as per work plan (attached)</p> <ul style="list-style-type: none">i) Reconfirm the sites for the chicken multiplication centres.ii) Commit the initial funds sent over to the Cook Islands for the 1st phase of the project.iii) Collect quotes for the next phase of funds for the project.
	<p>Tuesday 10 Nov 2015 Travelled to New Zealand via Nadi, Fiji</p>

Activity Description	<p>Wednesday 11 Nov 2015</p> <ul style="list-style-type: none"> • Travelled to the Cook Islands via Auckland. • Arrived on Tuesday the 10th of November 2015 <p>Tuesday 10 Nov 2015</p> <ul style="list-style-type: none"> • Settled in at the accommodation • Had a discussion with the head of the livestock department (Mr Tiria Rere) in the Cook Islands on the activities planned for the week <p>Wednesday 11 Nov 2015</p> <ul style="list-style-type: none"> • Had a discussion with the Permanent Secretary (Dr Mat Porea) on the objectives of the mission. • Had a discussion with the Principal of Takamoa Theological College on the status of the AnGR project at their site. • Visited the site for the chicken project that was started by Takamoa Theological College and got an update. <p>Thursday 12 Nov 2015</p> <ul style="list-style-type: none"> • Visited an alternative site for the Takamoa project, land belonging to Mr Teva Kirikava, at Avana Valley, Ngatangia, East of Rarotonga, Cook Islands. • Discussed with the land owner at the new site. • Collected remaining project funds from Takamoa College and committed it with the hardware in town. • Collected receipts for building materials that were purchased and used by Takamoa College. <p>Friday 13 Nov 2015</p> <ul style="list-style-type: none"> • Collected quotes for building materials for 2nd site for the AnGR project. • Visited the 2nd site and discussed with farmer the objectives and likely timelines for its implementation. • Had a meeting with the Permanent Secretary and head of Livestock and gave them a progress on the work that was carried during the week. • Visited the 2nd site for the project, i.e. land belonging, Ms. Teokotai Areai, at Avatiu valley, Avarua, North of Rarotonga, Cook Islands. <p>Saturday 14 Nov 2015</p> <ul style="list-style-type: none"> • Travelled to NZ arrived on Sunday 15th Nov 2015 <p>Sunday 15 Nov 2015</p> <ul style="list-style-type: none"> • Travelled to Fiji via Auckland.
Why Activity Important	<p>The conservation of biodiversity in genetic resources of indigenous chickens is an important activity for food security especially in the face of threats such as climate change impacts, natural disasters and other threats which would bring extinction to these valuable and irreplaceable resources. The activities are essential to conserving and maintaining these resources from being lost to extinction.</p>
Who Benefits/ stands to benefit from Activity	<p>The government and the people of the Cook Islands would benefit, i.e. animal breeders, donors and funding agencies and researchers would benefit from the centers.</p>

<p>Activities established</p>	<p>The following activities have been established during this trip</p> <ul style="list-style-type: none"> • Alternative site agreed on and provided to the project, the site belonged to Teva Kirikava at Avana valley, Ngatangia on the Eastern part of Rarotonga. • Funds that were committed to the initial site was obtained and recommitted for the alternative site at the hardware company. • Receipts for funds already committed were collected. • Quotes for materials for the 2nd site were collected.
<p>Problems</p>	<p>Some of the problems encountered in project were:</p> <ul style="list-style-type: none"> • The 2nd site for the project could not proceed as the funds for the 1st site were not committed due to the disagreement in the land provided. • Some of the funds had already been committed in the 1st site for building materials.
<p>Follow up</p>	<p>The following activities need to be followed up:</p> <ul style="list-style-type: none"> • Delivery of building materials to the alternative for the 1st site needs follow up to meet timelines for construction of the infrastructure, i.e. 1st qrt in 2016. • Provision of funds for the 2nd site needs follow up with SPC finance, i.e. the funds need to be sent to the Cook Islands during the 1st qrt 2016.
<p>Pictures:</p>	<div style="display: flex; justify-content: space-around;">   </div> <p style="display: flex; justify-content: space-around;"><i>Initial 1st site (Takamoa College compound),</i> <i>Alternative site selected</i></p>

ANNEX 7

Duty travel to Cook Islands - March 2016

SPC Suva Regional Office
Private Mail Bag
Suva
Fiji Islands
Telephone: +679 337 0733
Fax: +679 377 0021



SPC Headquarters
BP D5
98848 Noumea Cedex
New Caledonia
Telephone: +687 26 20 00
Fax: +687 26 38 18

DUTY TRAVEL REPORT

Staff Member	Nichol Nonga and Andrew Tukana
Countries Visited	Cook Islands
Programme	SO4 AHP/LRD
Project	South West Pacific Animal Genetic Resources – Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands Project
Period	12 – 20 March 2016
Background	The “South West Pacific Animal Genetic Resources Project - Conservation and multiplication of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” is a FAO funded project under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetic Resources (FS-GPA). The project is designed to promote development, conservation and utilisation of Animal Genetic Resources (AnGR) for conservation and food security through the establishment of on-farm (in-situ) conservation centres for indigenous pig and chicken breeds in these countries. These conservation, multiplication and breeding centres are established to help conserve and to breed climate resilient breeds for future breeding.
Objective	The objective of this visit to Cook Islands is to progress the establishment of one chicken conservation and multiplication centre in Cook Islands. The activities in collaboration with Ministry of Agriculture staff and host farmers include: <ul style="list-style-type: none"> i) Discuss details of progressing activities leading to the construction and establishment of 1 native chicken conservation centre in Cook Islands. ii) Assess and confirm a selected new site with the host farmer for the centre. iii) Collected quotes for procurement of construction materials, centre site clearing from suppliers iv) Other relevant activities to get centre built for breeding and production
Activity Description	<p>Saturday 12 March 2016 Depart Suva – Nadi Overnight in Nadi</p> <p>Sunday 13 March 2016</p> <ul style="list-style-type: none"> • Depart Nadi – Auckland NZ • Transit thru Auckland - arrive Rarotonga 22:10 (Saturday 12)

Saturday 12 March 2016

- Checked at the Mauke Hostel

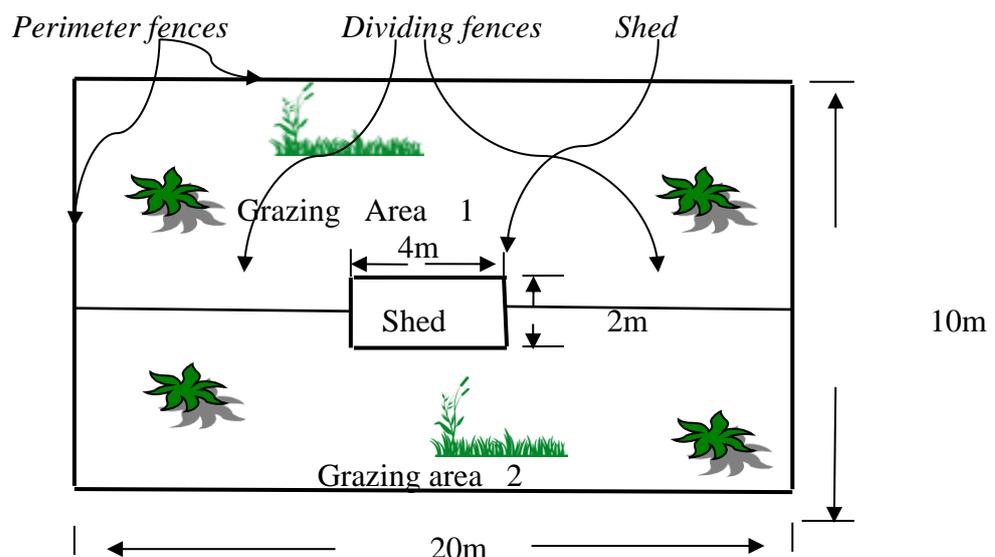
Sunday 13 March 2016

- Preparation of week's agenda
- Rest

Monday 14 March 2016

- **1 new site selected, assessed and confirmed** – A Consultation meeting held with Mr. Tiria Rere (Director of Livestock) on selecting a new site for the chicken facility since the original selected host institution (Takamoa Theological College) pulled out from hosting the facility. Tiria consulted a farmer who has agreed to host /build the centre on his piece of land. In fact, the new site is located close to Tiria's residential area, an advantage since Tiria would be able oversee the construction and help to manage of the facility.
- **Local chicken consumption in Cook Islands** – Local chickens are endemic in Cook Islands and the people have been using them as a source of protein for generations. The younger generation though is not used to eating local chicken products. This is an important factor to note if the chicken conservation and multiplication project is to be sustainable that there needs to be some promotion on consumption of local chickens.
- **1 Sketch Plan of Facility** - Tiria, Andrew & Nick developed a sketch plan of the chicken fence and shed. The fence would cover an area measuring 20m x 10m (200sqm) with a dividing fence inside the fence and a shed to be built at the center of the fence (see sketch site plan) and the dividing fences meet at both ends of the shed. The bottom half of the perimeter fence will be erected with chain-link wire mesh and the top with chicken wire mesh. The bottom of the fence will be lined with flat iron sheets to prevent dogs and cats digging under the fence into the yard.

Diagram 1: Chicken facility sketch plan – plan view



Tuesday 15 March 2016

- **Visit, assess and confirm a site** - After deciding on the site the team visited, assessed and confirmed the new site. The team found it to be an excellent site to build the centre on. It is a grassed area with a few coconut trees, breadfruit trees and other trees in it and so to build, it will be necessary to fell some trees and leave other trees to keep the area shady but providing an environment familiar to the local chickens.
- **A quote for a land clearing contractor** - Consulted a land clearing contractor for a quote to clear the site and prepare the land for construction. A quote was acquired for the clearing.
- **Budget developed** - Developed a budget for the extra materials and the clearing of the new site for construction to be sent to SPC to process funds to be transferred to the Ministry Account to expend.

Wednesday 16 March 2016

- **Smallholder livestock farms** – Travelled around Avarua Island, noted and observed livestock production systems and management in the Cook Islands including cattle (beef), goat, pig, chicken and duck farms. The majority of local chickens are raised on free-range system, cattle, goats and pigs are either tethered or penned in small pens in individual backyards. Noting these adapted livestock species in the Cook Islands is essential for future production and conservation work in the islands.
- **Duck proposal started** - The team discussed and worked on developing concept ideas on a duck production proposal to seek funds for the Cook Islands. Duck meat demand is increasing every year in the Cook Islands. We noted some duck populations and breeds which have adapted themselves to the environment. These could be part of the AnGR conservation activities in future programmes

Thursday 17 March 2016

- **TCP proposal animal diseases surveillance** - Discussed the need to develop a TCP animal disease surveillance proposal to be submitted to FAO for the Cook Islands. It has been more than 10 years since a surveillance report was done in Cook Islands.
- **Local livestock feed resources** - Went around the island observed and identified potential local feed resources which can be used to feed pigs, chickens and ducks and also types of grass/pasture for cattle and goats. Cook Islands has a lot of feed resources especially with fruits and nuts and these include coconut, breadfruit, mangoes (when in season), pawpaw rejects from farms, guavas, cassava tubers and leaves, taro peelings, s/potatoes vines and leaves etc. Discussed various ways how to utilize these resources efficiently.

Friday 18 March 2016

- **Communal piggery technical assistance requested** – A consultation was made on the request by Mr. Temu Okotai, Managing Director, Manihiki Black Pearls Ltd. who sought technical advice and assistance from SPC on the idea of establishing a communal piggery at his village on Avarua Island. The idea was to build a 20 – 30 room piggery at which every household in the village would own 2-3 pens to keep their pigs instead of having every household tethering or penning their pigs in separate locations. It is obvious that land plots are getting smaller for each family as the population grows so a communal piggery would

	<p>congregate pigs at one piggery and saving spaces for other activities. Pig waste is also polluting the environment via smells, waste runoff via streams and rain floods to the sea which is causing algae growth in the reefs.</p> <p>Constructing a communal piggery would house pigs in one place where proper husbandry management, drainage systems and waste management technologies installed. The model if successful could be adopted and duplicated in other villages in Cook Islands.</p> <p>LRD is supportive of this initiative and as thus we have assured the farmer that a concept plan would be developed to put the idea into a reality. A concept note is to be sent to the farmer via Mr. Tiria Rere, Director Livestock who would advise /liaise with Mr. Okotai.</p> <ul style="list-style-type: none"> • AnGR debriefing discussions - Final discussions on the progression of the establishment of the indigenous chicken conservation centre in Rarotonga was done with Director of Livestock. He has assured SPC that they will try their best to complete the centre within April and have it stocked for production. Monitoring and progress reports of the implementation would be sent to SPC by the Director Livestock, Mr. Tiria Rere. <p>Saturday 19 March 2016</p> <ul style="list-style-type: none"> • Depart Rarotonga – transit thru Auckland (+ 1 day) <p>Sunday 20 March 2016</p> <ul style="list-style-type: none"> • Depart Auckland – Nadi • Nadi - Suva
<p>Why Activity Important</p>	<p>The establishment of the conservation and multiplication chicken centre in the Cook Islands is essential for conserving the local chickens for future breeding and utilisation. Conserving indigenous chickens, pigs and other livestock breeds for food security and livelihood is of particular importance as we face the threats of climate change impacts, natural disasters, diseases outbreaks and other threats which could otherwise bring extinction to these valuable and irreplaceable resources. AnGR are essential for the provision of food such as meat, milk and eggs. Therefore, conservation is essential to maintain these resources from being lost to extinction for our future generation.</p>
<p>Who Benefits/ stands to benefit from Activity</p>	<p>Beneficiaries are the government and the people of Cook Islands, the people of the Pacific Region and the world including animal breeders and livestock keepers who would have diverse breeds to use for breeding for future use. Donors and funding agencies and researchers would also benefit from these centres.</p>
<p>Activities established</p>	<p>Some outputs achieved:</p> <p>a) Way forward - Discussed in details the future plans and way forward for the establishment, stocking and breeding and conservation of the chicken centre.</p> <p>b) One (1) new conservation site assessed and confirmed - Discussion with MoA staff Mr. Tiria Rere on the selection, assessment and confirmation of a new site for the chicken facility since the other selected host farmer had pulled out from hosting the facility</p> <p>c) One (1) Sketch Plan of Facility (diag. 1) – Nick, Andrew and Tiria developed a sketch plan of the chicken fence and shed with measurement details.</p>

	<p>d) Awareness to promote local chicken : Awareness programmes discussed and identified ways to promote local chicken consumption in the Cook Islands in view of the fact that many of the younger generation are not used to eating local chickens.</p> <p>e) Land clearing contractor quote- Consulted a land clearing contractor for a quote to clear the site and prepare the land for construction. A quote was then acquired for the clearing (see photo 1 & 2 for site)</p> <p>f) One (1) consultation discussion held – A villager requested technical assistance from SPC on the idea of having a communal piggery where each village household would have 2 -3 pens each where they would keep their pigs with proper drainage, waste disposal, proper management and saving land space for other activities.</p>
Problems	The inaction of the Cook Islands staff is evident of having to wait for our visit to progress issues is a concern. This needs to be taken into account for the delay in completing the construction of the centre.
Follow up	<p>i) Continue to monitor through Mr. Tiria Rere on the progress of the construction of the chicken centre in Rarotonga including procurement of materials, delivery of materials, construction and stocking and production of the facility.</p> <p>ii) Follow up on the funds to be sent to MOA for procurement of extra materials including the clearing charges of the site.</p> <p>iii) SPC developing a TCP proposal for duck project for CI</p> <p>iv) SPC to develop a communal piggery for a village in CI</p>
Acknowledgement	<p>We acknowledge the PS MoA, Dr. Mat Porea for supporting and allowing the staff to assist us in our work and also allowing a govt. vehicle to do our work. Acknowledged the active role played by Mr. Tiria Rere, Director of Livestock in making the arrangements and facilitating our visit to Cook Islands successful. It is also appropriate that we acknowledge Dr. Ken, Dr. Ilagi and the SPC staff for facilitating the trip.</p>
Photos	<p style="text-align: center;">New site for chicken conservation centre</p>  <p style="text-align: center;">Photo 1 & 2: <i>Chicken centre new site selected on Mr. Piri Tarapu's land</i></p>



Photo 3: *Goats tethered at a stake*



Photo 4: *Cattle grazing in paddock*



Photo 5: *Tethered pig*

Examples of fruits and nuts as potential local feed resources



Photo 6: *Coconuts*



Photo 7: *Vi fruits in season*



Photo 8: *Breadfruit*



Photo 9: *Avocado fruits*

Annex 8

A sample Letter of Agreement (LoA) between SPC and the countries



**Letter of Agreement
Between
Fiji, Ministry of Agriculture,
Animal Health & Production Division
and
Secretariat of the Pacific Community (SPC)
Land Resources Division**

For provision of

Activities in support of the project “South West Pacific Animal Genetic Resources Project – Conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands” under the Funding Strategy for the Implementation of the Global Plan of Action for Animal Genetics Resources (GCP/GLO/287/MUL)

1. Back ground

This Letter of Agreement (LoA) is in support of the activities detailed in the LoA between the Food and Agriculture Organisation of the United Nations (FAO) and the Secretariat of the Pacific Community (SPC) on behalf of the three project countries of Fiji, Niue and Cook Islands to implement the “South West Pacific Animal Genetic Resources Project - for the conservation of indigenous pig and chicken breeds in Fiji, Niue and Cook Islands”. The South West Pacific Animal Genetic Resources Project (GCP/GLO/287/MUL) is designed to conserve, develop and multiply indigenous pig and chicken breeds identified in the previous FAO project for distribution to farming communities. It is a ‘follow on’ from the “South West Pacific Animal Genetic Resources - Inventory and Characterisation project (GCO/GLO/157/MUL)” carried out in Fiji, Niue, Samoa, Solomon Islands, Tonga and Vanuatu in from 2008 to 2010.

2. Preamble:

The Animal Health & Production Division of the Ministry of Agriculture (MOA) the participating farmers/institutions and the Secretariat of the Pacific Community agree to work together in partnership towards achieving the respective visions and values of MOA and SPC through mutual understanding and cooperation both recognising their integrity and policies of governance.

3. Objectives.

The primary objective of the LoA is to establish a collaborative implementation framework for the activities identified in the SW Pacific AnGR project - conserve and develop indigenous pig breeds in Fiji and chicken breeds in Niue and Cook Islands funded under the Global Plan of Action – Funding Strategy (GPA-FS) for Animal Genetic Resources.

4. Outputs

The main outputs of the project GCP/GLO/287/MUL include:

- A collection of phenotypic and molecular genetic data characterising the indigenous chicken population in the Cook Islands
- A conserved population of superior local/indigenous breeding pigs in Fiji.
- A conserved population of the Niue chicken breed.
- A conserved population of the Cook Islands chicken breed.
- Breeding programmes for all three populations developed through participatory approaches.
- Effective management by the Service Provider (SPC) of the project and its activities.

5. Activities;

The project is to implement the following activities in each of the three project countries in collaboration with the Secretariat of the Pacific Community (SPC, Service Provider) and the countries of Fiji, Niue, and Cook Islands.

- Travel in the target country for consultations with officials, identification of conservation centre sites and cooperation farmer /institution identification, signature of agreements, and introductory workshop
- Construction, renovations and modifications of target farms to outfit them for operation of the conservation centre.
- Purchase of equipment needed
- Collection of founder stock from local farmers and transport to conservation facility, including recording of relevant data (production system, feed, housing etc in their local environment).
- Development of GIS-based maps showing homes to the adapted populations of indigenous breeds.
- Quarantine of purchased animals and treatment for diseases and parasites and establishment of biosecurity protocols.
- Development and operation of conservation breeding programmes.
- Training workshops for local producers.
- Distribution of improved stock from centres to local farmers and stakeholders.
- Presentations of workshops on lessons learnt.
- In Cook Islands, phenotypic and genetic characterisation of indigenous chickens will be undertaken.

Service Provider (SPC) will provide these services:

- Regular monitoring and progress reports with dedicated forms and questionnaires
- Preparation brochures and information leaflets on the activities of the project
- Periodic formal and informal interaction with livestock keepers and local stakeholders.
- Compilation of progress reports from the service provider to FAO.

6. Management of the Project

- i. SPC will be responsible for the coordination and the overall implementation management of the project including budgetary control, co-ordination of inputs through liaison with the Contact Person from the AH&P Division, MOA or his designated nominee and the Deputy Director of Strategic Objective 2 & 4, LRD.
- ii. The Animal Health & Production Division, MOA in collaboration with the participating farmer/institution shall be responsible for the implementation of the project activities in Fiji.
- iii. The Animal Health & Production Division, MOA, on behalf of the participating farmer / institution will make all reasonable effort to improve its efficiency in discharging its responsibilities in ensuring the proper implementation and operation of the project.

7. Payment of Funds

To enable completion of the project activities, SPC hereby agrees to undertake the following procurement activities in line with its Procurement Policy and Procedures

- i. Funds for this project are provided by FAO to the Service Provider (SPC) for the provision of services on behalf of the participating countries in accordance with the budget agreement between SPC and FAO. The total funds will be managed by SPC Finance as they are being transferred by FAO to SPC.
- ii. To ensure quick and efficient expending of funds, SPC shall keep and manage all funds for Fiji in its Finance Department. The participating farmer / institution shall provide invoices of materials or services required through the Contact Person of AH&P to SPC for the Finance Department to issue payments.
- iii. The purchase order or procurement contract will be issued for each procurement activity from the SPC Finance Department.
- iv. Upon receipt of the goods, equipment and services, XXXX will provide written confirmation of the receipt of the goods, services or equipment in line with the specifications and quantities ordered.
- vi. All receipts of procurements for all funds expended shall be included in the financial reports of progress reports sent to SPC with copies retained by the procuring agency (AH&P) for their records.
- vii. All machinery and equipment procured using FAO/SPC funds shall remain the property of FAO/SPC, until prior to the time the project has ended. During this time an official transfer of machinery and equipment shall be made by signing the appropriate transfer document, after which the participating partner may take full ownership of the assets. The farmer/institution shall be responsible for the cost of insurance, operations, repairs, maintenance of the machineries and equipment received.

8. Obligation of the Fiji Ministry of Agriculture

Reporting:

- i. The AH&P Division (on behalf of the farmer/institution) shall be obliged to submit progress reports of the project activities to SPC at the end of every three months (quarterly). This is to allow SPC time to submit the progress reports of the project to FAO HQ in Rome.
- ii. The AH&P Division (on behalf of the participating farmer/institution) shall be obliged to submit a completion report outlining the support they received from FAO/SPC and the resulting impact of the project on the conservation and development of indigenous breed.

9. All parties obligations:

The LRD, SPC and the AH&P, MOA and the farmer/institution are committed to fulfilling the responsibilities set out below:

- i. Communication: All parties involved (SPC, AH&P, MOA and participating farmer) shall remain engaged in a positive communication mode to relay information in a timely and reliable manner when requested. All parties wherever appropriate shall be encouraged to engage other stakeholders in positive communication on activities, impacts and suggested improvements to the project.
- ii. Information sharing: The ministry of Agriculture and the SPC LRD agree to share information including research, reports, data, creative works and networks that may lead to the development of the project activities.
- iii. Engagement: The MOA and the participating farmer/institution agree to fully engage in the implementation of the activities and to share data and information that is relevant to the project with SPC and that this information may be shared with FAO.
- iv. Media Coverage: Any media coverage generated on the project activities will be referred to in the first instance to the Director of AH&P Division, MOA and if there is any further query then it can be referred to the LRD SPC Deputy Directors of Strategic Objectives 2 and 4.
- v. Donor visibility: The SPC and the participating ministry agree to acknowledge support of FAO as the donor but according to the FAO guidelines.

10. Administrative provisions:

- i. Disputes: If any disputes arise, the SPC, the AH&P Division and the participating farmer/institution agree to engage in an active, open and in good faith discussion to resolve the disputes.
- ii. This Letter of Agreement may be terminated by either party by providing 30 working days notice in writing.
- iii. This Letter of Agreement is neither a fiscal nor a funds obligatory document
- iv. Review: Both parties may meet to review the operation of this document as and when the need arises

- v. Amendment: This letter of Agreement may be amended by both parties at anytime by agreement in writing (including email) between the Ministry of Agriculture and the Secretariat of the Pacific Community.
- vi. Unless authorised in writing by SPC, the participating country agency shall not advertise or otherwise make public that it has a contractual relationship with SPC, nor shall the participating country in any manner whatsoever use the name or emblem of SPC, or any abbreviation of the name of SPC.

11. Liability

- i. SPC does not assume liability for any claims for damages arising in connection with this Agreement.

12. Term

The duration of this project shall be 12 months with the **Starting Date** as determined by the date this document is signed by the Permanent Secretary of the Ministry of Agriculture, and the **End Date** of the project will be 29th day of October 2015 as prescribed in the LoA between FAO and the SPC.

13. Contact persons for the Agreement

The Contact Persons for the agreement are **Mr. Tomasi Tunabuna, Director of Animal Health & Production Division, Ministry of Agriculture, and the Deputy Directors for Strategic Objective 2 and 4 LRD, Secretariat of the Pacific Community.**

Executed as a letter of agreement

Signed on behalf of Secretariat of the Pacific Community

Deputy Director General

Signature _____

Date:

Name: Mrs Fekitamoeloa 'Utoikamanu
Position: Deputy Director General, Suva Regional Office

Signed on behalf of Ministry of Agriculture

Permanent Secretary

Signature _____

Date:

Name: Mr. Uraia Waibuta
Position: Permanent Secretary, Ministry of Agriculture

Annex 9

Exit Strategy for Fiji, Niue, Cook Islands

The exit strategy matrix developed for all countries to adhere to, after the project has ended to ensure sustainability is achieved. These main activities have been inserted. This will be signed by Ministries / Departments authorities when agreed to.

Table 1: showing various activities, responsible partners involved, time lines and costs to continue after the end of the project for sustainability.

Exit Activity	Responsible body	When in the Project Cycle will this be done?	How will it be monitored? What benchmarks will be used to monitor activity?	Responsible for monitoring and time line	Budget: cost of this activity?
Operational breeding of local chickens	Host farmer s /institutions DAFF (Niue) /MOA(Fiji) MOA (Cook Is.) SPC	After end of the project	Production reports from farmers DAFF visit reports (Niue) MoA (Fiji) farm progress reports MOA (Cooks) progress reports	Monitoring and promote conservation principles by DAFF (Niue) staff through reports Monitoring and promote conservation principles by MoA (Fiji) staff through reports Monitoring and promote conservation principles by MOA (Cooks) SPC will continue to monitor the sustainability of the project	Cost to be borne by host farmers and institutions
Conservation principle continues		Conservation and utilisation principles to be promoted in the countries.			
General monitoring of projects	MOA (Fj), DAFF (Nu), MOA (CI) Host Farmer /institution SPC	Monitoring continues throughout the duration of the project	Monitoring and assessments of the project will be contained in visit reports, progress reports and other reports by DAFF staff	MoA staff (Fiji) to do monitoring DAFF (Niue) staff will do the monitoring of the project MOA staff Cooks to do monitoring SPC continues to monitor	Cost to absorbed by Agriculture ministries and departments through their national local

				progress through staff in-country.	budget allocation
Purchase of feed both imported and local feed stuffs	MoA (Fj), DAFF (Nu) MOA(CI) Farmer	During and when the project ends	Feed will be monitored through reports from farmer Visits by DAFF staff Visit Reports, requests by farmer	DAFF Staff will do monitoring. MoA staff (Fiji) to do monitoring MOA staff Cooks to do Farmer also encouraged to report	Cost to absorbed into local government annual allocation
Marketing of pig and chicken products e.g. meat, eggs and manure	Farmer MOA staff, MOA Staff, DAFF staff, SPC	During the operation of the project Authorities to monitor progress	Farmer sales and market report Ministries/departments visit reports	Farmer to produce market sales report	No cost
Production data collected on operation e.g. off-spring performances	Farmer MOA(Fj) DAFF (Nu), MOA (CI) SPC	During project and after project ends	Visit reports, Farmer reports Data collected	MOA, DAFF staff, MOA Farmer is also obliged to report on progress	No cost
Distribution of local pigs, chickens to interested farmers	Farmer MOA, DAFF, MOA Interested farmer	Distribution of stock to interested farmers and purpose of need	Reports from Farmer No. of interested farmer to receive stock	Farmer to inform authorities of stock available for sale	No cost
Identify a lab to do analysis	SPC to identify and negotiate to do analysis	An MOU be developed between SPC and lab	Samples sent to lab for analysis	SPC will continue monitor the progress of the analysis	Negotiate for the cost of analysis
DNA analysis of local chicken samples in Cook Islands	SPC to collaborate with overseas lab.	DNA analysis results and report produced to SPC and Cook Islands	DNA analysis report is received from	SPC is responsible for acquiring the final report	Cost to be covered FAOs final tranche payment

Signed on behalf of Secretariat of the Pacific Community

Deputy Director Land Resources Division,

Signature _____

Date:

Name: Dr. Ken Cokanasiga

Position: Deputy Director, Suva Regional Office

Signed on behalf of Ministry of Agriculture (MOA) , Fiji

Permanent Secretary

Signature _____

Date:

Name: Mr. Uraia Waibuta

Position: Permanent Secretary, Ministry of Agriculture

Signed on behalf of Ministry of Agriculture (MOA), Cook Islands

Permanent Secretary

Signature _____

Date:

Name: Dr. Mat Porea

Position: Permanent Secretary, Ministry of Agriculture

Signed on behalf of Department of Agriculture, Forestry and Fisheries (DAFF)

Permanent Secretary

Signature _____

Date:

Name: Mr. Brendon Pasisi

Position: Permanent Secretary, Ministry of Agriculture

Annex 10

Description of characteristics of indigenous pig and chickens breeds.

Common features of an indigenous/local pig as compared to Exotic breeds

1. Indigenous pig breeds

Indigenous breeds of pigs are widely distributed throughout the region. These indigenous breeds have developed over long periods of time in the islands under harsh conditions and poor management. They are well adapted to local conditions; usually not very productive but are good scavengers, rear their young on poor rations and may have some level of resistance to local pests and diseases. Even though the productivity of these breeds may be low they are an important part of the local agricultural system because they can produce pigs under poor management systems such as the scavenging (free-range) system.

Because the indigenous pigs have never been selected for growth rates, litter size or body composition, they are smaller in size and put on fat more quickly than exotic or improved breeds. The smaller body size of the indigenous breeds also means that they have lower feed requirements than the improved breeds.

The fact that most indigenous pig breeds have developed over many years under production systems that have required them to scavenge for their feed means that they have developed the ability to utilize higher fibre and lower protein and low energy diets more efficiently than the improved breeds.

The appearance of indigenous breeds may vary widely between countries and also between regions in countries. Generally, the pigs are small in size with flat rounded backs. Litter sizes are generally low (5-6 piglets per litter). Adult pigs may be black, yellowish brown and it is not uncommon for very young animals to have striped markings. Some indigenous types of pigs may have wattles that hang down below their faces. Below are some characteristics that can be used to describe them against exotic or improved breeds:

Table 1. Indigenous pig common characters

Characters/ Traits	Description
Hair	dense, rough
Bristles distribution	on the dorsal line,
Snout	Long thin, snout
Body length	short
Body Stature (size)	Small – medium compared to exotics and crossbred.
Head size relative to body	Large
Tusks	Long, curved,
Colour	black, white with black spots, black with white spots, young ones can have brown stripes
Ear size	medium - small
Ear type / orientation	Erect ears, project upwards
Leg length	Short
Growth rate	Slow
Hardiness in local	Hardy

environment	
Adaptiveness	Adapt well into the local environment/tropical climate
Gestation length	112 - 114 Days
Tail length	Average ??
Piglets born	Average 5-6
Litter size at weaning	3-4 piglets
Wattles	Some pigs have wattles under the necks and jaws
Feed conversion efficiency	High (4.05 – 6.04)
Tolerant/resiliency	Some resistance to pests and disease
Mature (adult) weights	40 -60 kg
Skin	Wrinkled
Tail type	curly or kinked
Chest girth	Average cm
Height at withers	Average cm
Birth weight	Average gm
Weaning weight	Weaning weight kg
Teat number	Average 6 -8
Weight at sexual maturity	30 – 40 kg
Temperament	Friendly but can be aggressive
Rearing	Rear piglets under poor conditions
Carcass lean meat content	Low
Carcass fat content	High

2. Indigenous and native chicken breeds

Indigenous as according to the dictionary are chickens which are living naturally in a country and not introduced. Native means belonging by birth to a specific area or country and local means a native to that country. Improving poultry productivity would improve protein nutrition and could increase the income levels of the rural population. In addition, consumers prefer meat from indigenous chickens, because of its leanness and taste and the people prefer the multi-coloured plumage of these birds. The productivity of indigenous chickens can be improved by providing simple inputs such as appropriate housing, management, disease and pest control and supplement with nutritious feed. Indigenous chickens in the Pacific Island countries are hardy, adaptative to the rural environments and they can generally survive on little or no inputs and can adjust to fluctuations in feed availability. The productivity of indigenous birds which is expressed in terms of egg production, egg size, growth and survivability of chicks under the rural production systems is very low as compared to the exotic /commercial breeds. Limited attention has been given to the characterization and classification of the indigenous non-descriptive types and research is required to know more about these birds. Some preferred traits and advantages as described by Glatz, P.(unpublished report) which include 1) well adapted to free range and village farming system, 2) able to forage most of their own food, 3) breed on local feed resources, 4) excellent in hatching eggs and brooding chicks, 5) resistant to many diseases and pests, 6) can escape natural enemies such as dogs, pigs, birds, etc. 7) need minimum care and are easy to raise 8) eggs and meat can be eaten to feed the family 9) they can be sold for a good price in the market and 10) they produce manure for the garden. The purity of the indigenous chicken genes in the countries depends very much on the introduction of other breeds.

TABLE 2: Important characters and traits in indigenous chickens linked to economic advantage

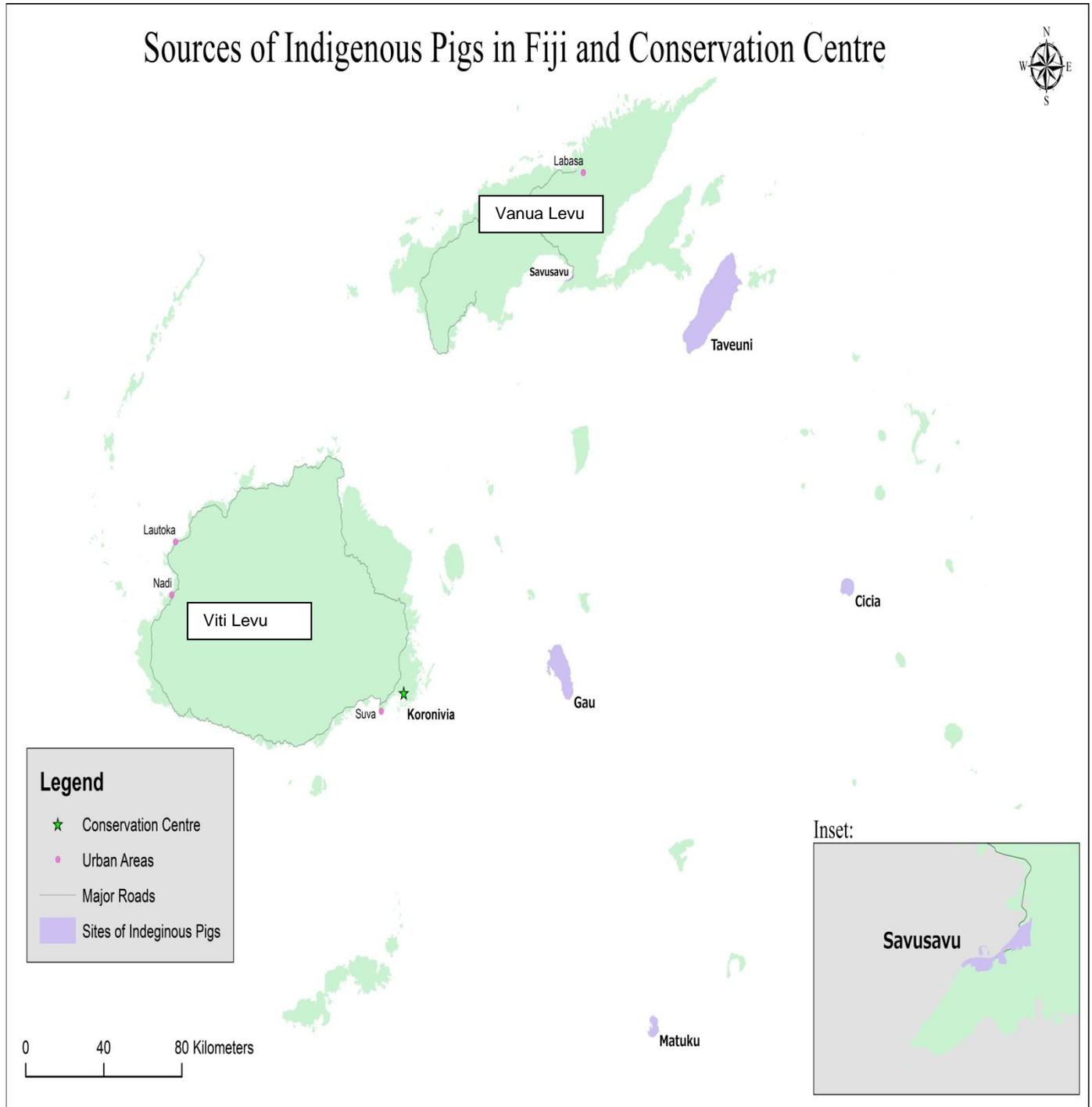
Characters/traits	Description of characters and economic advantage
Environment	<p>The common production system for the majority of indigenous chickens in the Pacific Island countries is the extensive free range production system, whereby the chickens roam village compounds and surrounding bushes to forage for feed and water. Chickens on free range systems have so many adaptations built over hundreds of years. One of the most obvious trait is they adapt themselves to the most difficult and hardest environments with little feed and water for their growth and production. Chickens have survived drought and floods and extreme weather events.</p>
Adaptability	<p>Adaptability is an important trait that indigenous chicken has developed over time, has a direct link with fertility, feed and water utilisation with minimum care breed – minimum feed, no housing. The indigenous chicken breed is a well-adapted breed that has lived, evolved and inhabit these countries for centuries. Their adaptability to the local environments makes them the ideal breed to be raised and produced in the rural environments. The breed can survive and reproduce with little feed and water.</p>
Hen Productivity / Mortality	<p>Egg production is low as compared to the commercial breeds as the local chickens lay eggs in clutches of around 10 -12 eggs per time and the hens sit on the eggs to hatch naturally (brood ability). They may have 6 – 8 clutches per life time. Eggs are hard to locate when the birds are in free range production system.</p> <p>Mortality rate on local chickens is high especially on young chicks, it goes to about 75 – 80 % mortality rate and this means that out of 10 – 12 eggs in a clutch of eggs that hatch only about 2 -3 chicks grow to maturity. Mortality is caused by predators such as dogs, cats, rodents, birds and pests and diseases.</p>
Heat Tolerant	<p>The breed is tolerant to high temperatures especially tolerant developed ability to adapt to high temperatures. It is good to be resilient to heat in the Pacific Islands environment. Temperatures can go as high as 30 – 37°C. They live and reproduce in such an environment.</p>

<p>Disease and Parasite Tolerant</p>	<p>The birds have built tolerance to existing local pests and diseases. The main disease prevalent in almost every country in the region is Fowl pox and external and internal parasites. Though these are present in the countries, the birds have over the years built resistance or tolerance to these diseases</p>
<p>Ability to fly</p>	<p>Indigenous / local chickens have an ability to fly high and great distances. This is an adaptability advantage to allow birds to escape from predators during the night and day. They are most vulnerable during night times when they are asleep and so to avoid being captured by predators they fly up on tree tops and roost there for the night until daytime when they can fly down to the ground.</p>
<p>Meat Quality</p>	<p>The quality of meat is also very good with white flesh when cooked and tasty to eat with a bit of yellow fat. Although small in body size they have good meat composition when raised in a proper environment. The meat can be tough in older birds. The bones are smaller and lighter than the commercial breeds.</p> <p>Potential chicken meat for market with quality and tasty meat</p>
<p>Colours</p>	<p>All indigenous chickens, roosters and hens have multi-coloured feathers. This is an advantage as a camouflage against multi-coloured backgrounds from predators from the ground as well as from the air. The multi-colour adaptability is used widely by the young chicks to avoid being detected by predators.</p> <p>The colour of feathers is an attractive product for the market</p>
<p>Feather Quality</p>	<p>The multi-colours provide good camouflage against predators in the bush and are attractive. Unblemished feathers, easy to clean and colour attractive. Feathers are used by people in the region as an item for fishing lures, decorate artifacts and other traditional uses.</p>

A story of similar breed in the region – Samoa- Link: <http://dad.fao.org/sstories/documents/story27.html>

ANNEX 11

GIS maps of Fiji, Niue and Cook Islands, showing sources and homes of indigenous pig and chicken breeding stock



Indigenous Chicken Conservation Centres



Map of Niue

Indigenous Chicken Blood Sample Sites



ANNEX 12

Photos of project related SW Pacific AnGR Project activities

FIJI PROJECT RELATED ACTIVITIES

Indigenous pigs breeding centre at Koronivia Research Station, Fiji:



Pig breeding centre built by MOA



Black coloured indigenous breeds



Black and spotted indigenous pig breeds



Indigenous spotted pigs





Indigenous litter



1 day old piglets - Koronivia Research Station



Piglets of a spotted sow



Black indigenous gilts ready for mating.

NIUE PROJECT ACTIVITIES

Niue chicken facilities



Niue chicken "house -with -a- run" fence



A new shed extension built



Floor of shed

Examples of Niue indigenous chickens



Indigenous chickens confined



Free range indigenous chickens foraging



Indigenous chickens foraging



Trimming primary feathers to limit flight.

Niue Field Day exhibition November 2015 - CRGA Meeting



Install Signage board at Leo's Farm



Host - Leo Pita & family welcoming visitors



Dr. Ken Cokanasiga, Deputy Director LRD, explaining the project to a visitor



Dr. Colin Tukuitonga, Director General SPC(left), handing over the project to Director General of Ministry of Agriculture, Forestry and Fisheries (MAFF), Niue.

COOK ISLAND PROJECT ACTIVITIES

Cook Islands breeding, conservation chicken fence being built



New site cleared and built



Chicken centre being built



New chicken centre built



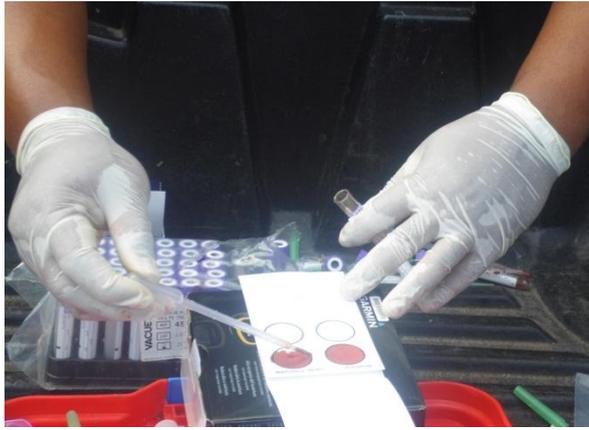
Cook Islands chickens blood samples collected for DNA analysis



Chickens for blood sampling



Chickens for blood collection



Blood samples onto FTA cards