SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

ANNUAL REPORT 2017-2018

FAALAPOTOPOTOGA O SUESUEGA FAASAIENISI A SAMOA

(Please address all correspondences to:
Hon. Minister of Agriculture & Fisheries)

Government of Samoa

OFFICE OF THE MINISTER

MINISTRY OF AGRICULTURE & FISHERIES
(and SCIENTIFIC RESEARCH ORGANISATION OF SAMOA)

Honorable Speaker of the House
Legislative Assembly
MULINU'U

In accordance with the Scientific Research Organisation of Samoa's Acts 2006 (RDIS Act 2006) and 2008 (SROS Act 2008), I am pleased to submit herein the 12th Annual Report of the Scientific Research Organisation of Samoa (SROS) for the year ended 30th June 2018.

The Report is the record of the Organisation's performance during this financial year, in accordance with its mandate and output structure, and to be laid before the Legislative Assembly of Samoa.

Ma le fa'aaloalo lava

Honourable Lopao'o Natanielu Mu'a
MINISTER
SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

TABLE OF CONTENTS

Table of Figures

List of tables.

List of Graphs

1 Statement to Parliament

1.1 Introduction

Financial year 2017-2018 has been another successful year for SROS due to well-blended collaboration between the five divisions namely the Administration and Finance division, Environment and Renewable Energy division, Plant and Postharvest Technology division, Food Science and Technology division and Technical Services division. There are over 50 staff members employed by the organisation who are all based at Nafanua. SROS work in partnership with various industries, universities and local communities to assist with scientific researches that provide in-depth level of understanding and application of science to benefit Samoa's economy and its industries. The organisation provide expert opinions to meetings or consultations regarding locally available tests, researches and new developments they are currently working on.

The world is rapidly changing in all aspects including economy and industries and Samoa must evolve and advance with these changes in order to seize opportunities that are brought by these changes. We must be innovative, creative and persistent in order to achieve our vision which is "through research and development of value adding to goods and services, a significant improvement in the national GDP and social benefits to Samoa is achieved."

This year we carried out researches on frozen products and new product developments. One of the milestones this year is the development of the taro whiskey that is made from local taros. The organization also continues to provide specific scientific tests and analysis for government ministries and private companies. SROS will continue to be a vibrant and integral part of Samoa's development in the field of research and development.

The research and development activities performed are geared by the Organisation objectives which are;

a) To promote the national economy of Samoa based on research and development;
b) To undertake scientific and technical research with the primary aim of adding value to local resources and services;
c) To develop functional prototypes of products and processes based on scientific and technical research for the local or overseas markets;
d) To establish partnership with the private sector and commercial interests to support the Organisation's activities;
e) To ensure effective training for researchers and professionals engaged in scientific and technical research work;
f) To conduct analysis of narcotics or precursors for the purposes of investigations and prosecution of offences; and,
g) To undertake environment impact assessments.

1.2 SROS Vision and Mission Statement

SROS Vision

"Through research and development of value adding to goods and services, a significant improvement in the national GDP and social benefits to Samoa is achieved".

SROS Mission Statement

"SROS aims to conduct scientific research and develop technologies which outcomes are of great value in the development and sustainability of value added goods and services for export and to achieve reduction on fuel imports and greenhouse gas emissions"

1.3 Objectives and Priorities

Supporting its vision and mission statement, SROS is committed to delivering on the following key objectives:

a) To promote the national economy of Samoa based on research and development;
b) To undertake scientific and technical research with the primary aim of adding value to local resources and services;
c) To develop functional prototypes of products and processes based on scientific and technical research for the local or overseas markets;

d) To establish partnership with the private sector and commercial interests to support the Organisation's activities;
e) To ensure effective training for researchers and professionals engaged in scientific and technical research work;
f) To conduct analysis of narcotics or precursors for the purposes of investigations and prosecution of offences; and,
g) To undertake environment impact assessments.

Additionally, SROS also performs various functions:

1) The Organisation also performs various functions such as:
   a) To carry out scientific research and develop technologies for any of the following purposes:
      (i) contributing to the achievement of national goals in the Strategy for the Development of Samoa and any other national plan of Samoa;
      (ii) assisting local industries, Government Ministries, corporations and agencies;
      (iii) furthering the interests of the community;
      (iv) any other purpose determined by the Board; and,
      (v) Conducting analysis of narcotics or precursors for the purposes of investigations and prosecution of offences.
   b) To encourage and facilitate the application of the results of any other scientific research;
   c) To act as a means of liaison between Samoa and other countries in matters related with scientific research and development;
   d) To train and to assist in the training of researchers and workers in the field of science and to cooperate with tertiary education institutions, both local and overseas, in relation to education in any field of science;
   e) To establish and award fellowships for students to do research, and to make grants in aid of research, for a purpose referred to in paragraph (a);
   f) To collect, interpret and disseminate information relating to scientific and technical matters;
   g) To publish scientific and technical reports, periodicals and papers; and,
   h) To carry out environment impact assessments.

2) The Organisation may:
   a) Carry out food analysis and testing required under any food legislation or other enactment; and,
   b) Issue reports or certificates regarding food analysis and testing under a).

In performing its functions, the Organisation shall take into account relevant Government policies as communicated to the Organisation by the Minister or the Board of Directors.

The Organisation shall also:
i Treat the functions referred to in 1) a) and b) above as its primary functions; and,
ii Treat the other functions referred to in 1) c) to h) and 2) as its secondary functions.

2 Chairperson's Report

I am very grateful to work alongside the members of our Board of Directors and it is an honour for me to lead the Scientific Research Organisation of Samoa for this financial year 2017-2018 as chair. Our aim was to fulfil our corporate objectives with the aspiration to meet the Government of Samoa's economic development strategies. One of the aspiring goals for the organization is to conduct scientific research that can offer great benefits to Samoa's industry, local farmers and exporters.

2.1 Activities and Performance of the Entity

SROS' board of directors approved four major projects proposed by the Chief Executive Officer and the Management team.

1. Construction of the new breadfruit multiprocessing building.
2. Production of the Taro Whiskey.
3. Major renovations for three technical laboratories.
4. Purchasing of the new Hilux vehicle.

One of our greatest achievement was the production of taro whiskey from our locally grown taro crop. SROS continues to produce quality results from our research laboratories. The spectrum of tests performed ranges from biological to chemical analysis. We also assist the Ministry of Police by carrying out drugs analysis for *Cannabis* plant and other hard drugs such as methamphetamine (ice).

We are committed to maintaining our support to improve the quality of local products mainly for export through value-added research. New research on cocoa, avocado, and breadfruit as well as exploring pathways for exporting these local produce are ongoing. Research on identification and extraction of essential oils from locally available plants are in progress. Uncovering the hidden healing properties of our native plants for medicinal purposes and understanding these properties better will be our next big milestone.

2.2 Capital and Dividend Information

The major capital investments accomplished by SROS in this financial year are:

- The construction of the breadfruit processing multipurpose building. This new building will boost the production of breadfruit flour and will be used to perform research for other value-added products.
- Renovation of the Postharvest, Plant, and Technology Division, and Environment and Renewable Energy Division. These major renovations were highly recommended to improve the standard of our laboratories in order to meet international standards or requirements for laboratories.

- The minor renovations were carried out for the Technical Services Division. As part of its IANZ international accreditation process, the facilities in Microbiology and Chemistry laboratories must be upgraded to meet requirements for the next accreditation assessment.

- A new Hilux vehicle for the Environment and Renewable Energy Division was bought to assist with field work and collection of samples from selected sites for research and testing.

The annual payment of dividend to Government does not apply to SROS according to its legal status as a public beneficiary body under the Public Bodies (Performance and Accountability) Act 2001.

2.3 Board of Directors Information

This financial year we welcomed a new member to the Board of Directors, Afioga Masoe Iosefa Tuatua after we farewelled to Ulu Bismarck. Ulu has taken a new appointment as the Chief Executive Officer of the Ministry of Natural Resources and Environment in June 2018.

Members of the Board of Directors:

• Sulamanaia Montini Ott	Chairperson
• Asiata Professor Satupa'itea Viali	Director
• Manuleleua Dr. Sonny Lameta	Director
• Tusani Iosefatu Reti	Director
• Jewel Monica Adeline Cook	Director
• Masoe Iosefa Tautua	Director
• Tilafono S. L. David Hunter	Director
• Dr. Seuseu Tauati	Chief Executive Officer

The Board of Directors has stipulated policies and guidelines through the Chief Executive Officer and Management team to ensure proper and efficient performance or service by SROS.

Key approvals by the Board of Directors:

- Review and endorsement of research and technical project proposals;
- Review of SROS quarterly and annual report submissions including audited financial statements to Ministry of Public Enterprises and Cabinet; and research project completion reports;
- Key development activities
- Providing expert advice to the CEO and Management concerning the smooth progress of SROS's mandated functions and activities.
- The Board of Directors held a total of ten (10) monthly meetings during this financial year.

The Directors' fees to the value of SAT$79,021 were paid to the five eligible Directors (Sulamanaia Montini Ott, Jewel Monica Adeline Cook, Asiata Professor Satupa'itea Viali, Manuleleua Dr. Sonny Lameta, Tusani Iosefatu Reti, and Masoe Iosefa tautua), while the other two Directors who are

public servants weren't remunerated. A total of SAT$2,898 was expended to support the functions and activities of the Board of Directors throughout the financial year.

2.4 CSO Obligations

We did not implement any CSO Obligations during this financial year. However, SROS continued to collect water, food, plant, and soil samples from the villages or districts upon requests from the minister or a member of the parliament.

2.5 Closing Remarks

This annual report is only a summary of a busy and productive year not only for SROS but the Board of Directors. I would like to thank Dr Seuseu Tauati for his great leadership and guiding SROS through another successful year and I am grateful to everyone for their valuable contribution and commitment to SROS over the last 12 months. I am very encouraged by the progress we have made so far and looking forward to another fruitful 12 months.

Soifua & God bless!

Sulamanaia Nu'uetolu Montini Ott
Chairman
Board of Directors
Scientific Research Organisation of Samoa (SROS)

3 Chief Executive Officer's Report

This financial year has seen SROS building on its existing momentum in research and development in the areas of agriculture, environment, and health through various activities as mentioned in the divisional annual updates and achievements. Scientific Research Organisation of Samoa (SROS) has a sustainable and effective platform to realize its vision which is "Through Research and Development of value adding to goods and services, a significant improvement in national GDP and social benefits to Samoans is achieved.

3.1 Highlights for the year

In the first quarter of the financial year, SROS trial for commercialisation of its products and it was the key focus for SROS to work with private sectors to achieve this task. Through collaboration with Global Mana and SAME saw the establishment of a 20-foot mobile dehydrator/ dryer prototype that is presently being tested that could be able to assist with breadfruit flour production.

The production of whiskey from taro and selected fruits will be ready for possible commercial sale in the coming months with the arrival of the barrels and bottles and completion of the processing facility.

Figure 1: Taro Whiskey

Another major highlight of the first quarter was the Cocoa in Samoa is growing international recognition again, and SROS is assisting by improving local fermentation practices to ensure the quality of cocoa beans. Furthermore, establishing cocoa roasting profile trials and production of cocoa mass in the laboratory. Lastly, the data collection selected from cocoa plants for leaf anthocyanin content, fruit surface color, form and texture, cotyledon color and leaf dimensions.

Figure 2: Cocoa Beans Collection, Fermentation, and Drying.

In the second quarter was The 2017 Samoa: Home of the Ma'afala Pacific & Global Breadfruit Summit successfully convened in Apia Samoa on October 10th, 11th and 12th 2017. The response and positive feedback to the Summit have been overwhelming and much better than we expected. The Summit theme, "Home of the Ma'afala" resonated with participants who came from around the Pacific, Caribbean, Asia, Africa, the US and Canada in the spirit of sharing their alofa for breadfruit. Indeed, Ma'afala breadfruit is now known as a great gift from Samoa to the world, as this variety is being planted extensively (over 100,000) in over 40 countries around the tropic zones in Asia, Africa and America's, with tens of thousands currently growing in massive greenhouse developments in Florida and elsewhere. Why Ma'afala? Of all the varieties studied and researched, Ma'afala is the most resilient and best among the best of breadfruit in the world, hence its extensive propagation for transfer throughout the globe.

It is also clear that breadfruit is more than just a crop: it is an integral part of the ancestral heritage, the healthy traditional diet, community food security, and the island landscape. Indeed, here in Samoa, the breadfruit itself is synonymous with "Home." The knowledge of growing breadfruit in family plantations that are commonplace in Samoa is as big of a gift as the breadfruit itself. In much of the rest of the world, the traditional multi-story food gardens, also known as agroforests or food forests, have been removed for the sake of large-scale monocultures.

Figure 3: Ma'afala Pacific & Global Breadfruit summit.

It is also critical that research and testing results by appropriately certified professionals and scientist be shared to assure continuous improvement and certification of technologies to maximize benefit utilizing state of the art technologies that can cross-validate and assure veracity and quality assurance. Appropriate University research experts and scientist from research institutions such as the National Tropical Botanical Gardens Breadfruit Institute (NTBG-BI), Scientific Research Organization of Samoa (SROS), Koko Siga Pacific (KSP) of Fiji, University of British Columbia (Fipke Centre for Innovative Research), Kansas State University (Milling, flour making, nutrition and food safety), the University of the West Indies (UWI) and the University of Hawaii (tropical agriculture) whom have been involved extensively with breadfruit research and analysis, propagation, milling and flour making collectively provide the best source of information regarding the breadfruit to date.

The third quarter of the current financial year, SROS continues to perform proficiency tests for technical services laboratories to independently assess and monitor the accuracy and reliability of their test results given to clients. Moreover, our narcotics laboratory is preparing to broaden its testing capacity to include the analysis of biological samples, particularly for workplace drugs testing (random drug testing on employees).

Another major highlight of this quarter was that SROS had finalized its whiskey product with the intention of launching before the end of this year. The cabinet officially accepted the Samoa Whiskey brand in February 2018. SROS continued to work with the local farmers and refreshes the knowledge of farmers and market vendors around postharvest handling and minimal produce processing. This was to meet standards for good agricultural practices and food safety requirements.

Figure 4: Taro Whiskey Punae Label and Brand.

In the last quarter, the Technical Services Division has performed well with its ILCP, or proficiency testing's achieving more than 94% pass rate to all the 70 samples received during this quarter. The Division has also surpassed its revenue generation allocation throughout the twelve months of the current financial year. The new food processing building for breadfruit flour and margarine was officially handed over to SROS, through SROS chairman and board of directors. The building cost SROS $140,000. Samoan tala and is now ready for operation.

Figure 5: Water Quality Testing Analysis, and Consultancy technical works.

3.2 Overview of operating performance and results for the year

Collaboration amongst stakeholders including our development partners, international and regional organizations, Government agencies, and the private sector, have contributed

significantly in driving the Organisation's research and development activities via financial support of various projects in renewable energy, product development, plant and food technologies, and technical services.

3.2.1 Technical Services Division

The Technical Services Division (TSD) continues to strive towards its targets through the work executed by its three (3) laboratories namely;

- Chemistry
- Microbiology
- Narcotics

Equipped with technologies and methods that are current and recognized worldwide, TSD endeavours to provide quality-assured technical and analytical services for its customers and stakeholders.

The Technical Services expertise encompasses an array of microbiological, physical, chemical and narcotics analyses for products such as foods, waters, oils, animal feed, illegal drugs (narcotics) and so forth; - established to facilitate the following:

- Food safety assessment and monitoring;
- Product certification for compliance (or lack thereof) with national and international safety standards and regulations;
- Assessment and monitoring of quality of waters used for recreational purposes;
- Development of national safety standards and criteria;
- Verification of product label claims (nutritional and microbial content);
- Cross-border trade (import and export);
- Product development and evaluation;
- Evaluation of hygiene/sanitation state of food-manufacturing/processing plants;
- Optimization and improvement of food-manufacturing processes;
- Shelf-life analyses for foods and beverages;
- HACCP analysis;
- Environmental Impact Assessments;
- Prosecution court cases for drugs/narcotics possession.

At a glance, TSD's key achievements for the financial year 2017/2018 are as follows;

- TSD encountered a significant increase in not only the number but also type of sample products received and analysed in all its three (3) laboratories (*corroborated by the increase in our collected technical services revenue*);
- New collaborations with other government ministries and private sector companies were established;

TSD's ongoing annual IANZ-accreditation was successfully upheld in February.

3.2.1.1 International Accreditation

TSD's chemistry and microbiology laboratories are accredited by International Accreditation New Zealand (IANZ) in accordance with the Standard ISO 17025:2017. A milestone first achieved in March 2011 and is still continuing. IANZ assessment to ensure the conformance of the testing laboratories to the international standard and the requirements of accreditation is annually. Our laboratories have successfully maintained accreditation status for eight (8) consecutive years.

Furthermore, we are currently the only accredited testing laboratory in Samoa, and one (1) of only two (2) in the Pacific. This is a noteworthy achievement and testament to the competence of the staff; the integrity and technical validity of analytical methods and results; and the continued commitment to quality assurance for the customers. Through IANZ accreditation, TSD testing services can deliver on purpose with confidence.

Under the accreditation requirements, the laboratories continually participate in Inter Laboratory Comparison Programmes (ILCP) every calendar year, to monitor the validity of the methods as well as the performance of its analysts in their allocated areas of testing. For this financial year, there were seven (7) ILCPs that the TSD laboratories participated in. They were Meat and Bone Meal Chemistry, Food Microbiology, Chemistry, Water check Microbiology, Pathogens Microbiology, Mercury and Histamine proficiency programmes. Satisfactory results were achieved in all programmes. This is an additional achievement in itself, boosting TSD confidence as they prepare for the next annual IANZ surveillance assessment in November.

Figure 6: Technical Services Laboratories, and IANZ Accreditation.

3.2.1.2 Bottled Water Monitoring Programme with MOH

The Microbiology laboratory, through the employment of its accredited water testing methods, continues to assist the Ministry of Health (MOH) in their bottled water company (BWC) monitoring programme.

Presence-Absence testing for Total Coliforms and *E.coli* are carried out on bottled water samples received from MOH, for independent verification of product compliance (or lack thereof) with the National Drinking Water Standards (NDWS). This in turn will facilitate the Ministry's assessment (and product recall where necessary) of bottled water products that are produced locally and consumed by the public.

3.2.1.3 Narcotics Analysis

The Narcotics laboratory continues to provide testing services for the Ministry of Police to assist with court cases related to illegal drugs and precursors under the Narcotics Act 1967. The services include confirmatory analyses for *Cannabis* materials, hard drugs such as methamphetamine and their precursors, as well as utensils.

For this financial year, the laboratory samples from the Ministry of Police were mostly suspected Cannabis samples and utensils alleged to have been used on methamphetamine.

The narcotics laboratory aims to broaden its testing capacity to include the analysis of biological samples, particularly for workplace drugs testing (random drug testing on employees). Test scope expansion has been sparked by a growing interest from the Ministry of Police and other local companies and government Ministries. As such, quotes have been sought from the Institute of Environmental Science and Research (ESR), Wellington, New Zealand, which SROS has identified as the training provider.

The proposed training will consist of two (2) parts, namely the "training needs assessment" (for 2-3 days) and the "ESR based training (for two weeks). The former constitutes of a visit by two (2) ESR forensic toxicology staff to SROS, to perform in-depth training needs assessment, scoping the narcotics laboratory current instrumentation and staff capability before devising a comprehensive training plan to prepare for the second part of the training program which is to take place in Wellington. Part two (2) will involve authorized senior TSD staff undergoing training at ESR in Wellington, which will focus on the actual drugs analysis methods for biological samples.

The whole training cost is approximately NZD$80,000.00 and is broken down as follows:

- Part A: Training needs assessment of NZD$35,000.00
- Part B: Capacity Training in drug testing on biological samples of NZD$45,000.00.

The Attorney General and the Ministry of Police are supporting this training; however, lack of funding is currently an impediment.

Figure 7: SROS' Narcotics Laboratory and Technical Scientists.

3.2.1.4 Waterfront Project

TSD's testing laboratories are contracted by MNRE to provide microbiological analysis to determine the quality of the water targeted by the Apia Waterfront Development Project to be used for recreational purposes. The water quality assessment is based on the enumeration of pathogen indicators namely *E. coli* and Enteroccoci for fresh and marine waters respectively. Conductivity and pH are also measured as a supplementary part of the analysis.

This undertaking is documented in and governed by a Memorandum of Understanding (MoU) between SROS and MNRE which was finalized in November 2017. As per the agreed schedule outlined in the MoU, a batch of sixteen (16) samples from sixteen (16) sites is to be received on a weekly basis during the 'Wet Season' (November 2017- April 2018) and then fortnightly in the 'Dry Season' (May 2018 – October 2018).

Figure 8: MNRE's Waterfront Project.

3.2.2 Food Science & Technology Division

The FSTD is responsible for Output 4 – Industrial Product Development Services –and undertakes research on food materials and processing into new product prototypes and agro-processing techniques, and uses of appropriate technologies to improve the commercial prospects for food products, including food preservation and packaging.

3.2.2.1 Gluten-free Breadfruit Flour

The snacks made from breadfruit flour for the Pacific Islands Leaders Meeting held in Japan received great feedback. The same type of snacks were prepared for tasting by students was also well received. The company representative Mr Wakamatsu has requested for more samples but to be sent by sea freight to trial the long voyage effect on the quality of the flour as this is the cheaper preferred option for freight.

The product development building which will house the equipment for trial commercialization of breadfruit flour has been completed. The new and old ovens plus all associated equipment for flour processing has all now been relocated to the new building.

Figure 9: New product development building with ovens for flour production.

The recently signed and completed Letter of Agreement (LOA) between FAO and SROS for breadfruit related activities (part 'b' below) included a market study for breadfruit products in Auckland New Zealand this quarter. Twenty (20) kg of breadfruit flour samples were prepared and taken over as promotional samples for the places visited which included supermarkets, specialty stores, pizza places and bulk buyers of gluten free flour.

Figure 10: Some of the gluten free flour buyers/sellers visited. Gluten free store & organic and specialty foods in Auckland area.

From this market study the obvious market for breadfruit flour from Samoa are the food manufacturers or wholesale buyers who use it as an ingredient for flour based pre-mixes and products as done by Gluten Free Store, Venerdi and Bakehouse. The breadfruit flour only need to be packed in large sacks with only the basic labelling requirements to be met.

The retail market for this kind of specialised food has high and strict requirements in terms of certification and packaging. The promotional costs associated with the marketing activities to ensure the product competes with all the other gluten free products is expected to be high. As Ms Joyce of Specialty foods stressed, the suppliers of products need to be active with their marketing efforts and not just dump products on their shelf and expect them to sell. Consumers are fussy and need to be informed on the products they are buying, how it can be used and what benefits they bring.

The SROS currently produces flour for the retail market using cheap packaging and sells it at a highly subsidised price of SAT$10/kg. Targeting an overseas market makes more sense and the cost of packaging and freight should be as minimal as possible to make the product more price competitive. Targeting the wholesale buyers is the cost effective option for breadfruit flour with minimal requirements for packaging and marketing

.

The SROS is currently reviewing the business plan for flour and has now ordered in bulk packaging for trials with samples to be sent to Gluten Free Store in the hope of securing this market.

3.2.2.2 Avocado Oil and Coconut Margarine

Since avocado oil is seasonal, the oil extracted during the season will be filtered and bottled. The percentage of oil and wax will be calculated to determine edible oil yields and the number of bottles which can produced.

Avocado fruit is one valuable tropical produce which is highly underutilized in Samoa. It recorded from previous researches that it has positive health claims such as lowering blood cholesterol, controlling weight and providing humans with the essential nutrients and vitamins the body needs. It has a healthy fatty acid composition which is dominated by the good fatty acids that helps lower the bad cholesterol and raise the good cholesterol.

The tender for the multipurpose processing equipment was released for one month this quarter with the first tender opening resulted in another two-week extension as no bids received by opening day. During the second opening the following two bids were received;

1. Thermaflow from New Zealand – total bid of NZD 471,551
2. Emona Instruments Pty Ltd from Australia – AUD 570,526

The tender documents have received from MOF, and evaluated by the selected evaluation committee consisted of the members from the Office of the Attorney General, Ministry of Finance and SROS. Therefore, the committee recommended to re-tender the purchasing of the machine.

3.2.2.3 PHAMA – funded Cocoa value adding

This project report was completed and submitted to the PHAMA office in Suva upon receipt of cocoa evaluation results from both Ola Pasifika and the Queensland Department of Agriculture laboratory. The conclusions and recommendations for the study are as detailed below.

The revival of the cocoa industry in Samoa involves the amalgamation of all value chain factors from supply, to postharvest to processing and marketing. This project has provided very useful information for the farmers and are summarised below;

- The average fresh weight for pods straight after harvest varies greatly and ranges from 384g (Treatment 2) to 460g (Treatment 1) with a slight loss in weight (~7%) after storage,
- Yield of wet beans from number of pods is around 8%,
- Beans weight loss after fermentation is around 14%,
- Yield of fermented, dried beans from wet beans is around 38% and expected to be slightly lower when beans are sorted,
- To ensure optimum results, beans should be fermented for at least 5 days and more,
- The percentage yield of fermented, dried beans from the number of good pods used is around 3.5%, and is dependent on the quality of pods,
- Sorting at the pod cutting stage, removal of floating beans during washing and sorting after drying all contribute to ensuring quality beans are produced and selected for trade,

- The physical and chemical tests should all be carried out to complement the cut test for cocoa beans intended for the chocolate industry to ensure quality,
- Feedback from the sensory analysis by chocolatiers (research phase and on-farm site trials) have proven the fermentation and drying method studied at Vietnam greatly improves the quality of the cocoa beans intended for the chocolate industry,
- The quality of material (e.g. wood) in contact with the beans when fermented and dried can impart an effect on the resultant end-chocolate flavor,
- This design of solar dryers can reach temperatures above 63°C with an average of 35°C, and are a must-have for big cocoa farms to cater for the rainy season.

With a lot of technical projects supporting the revival of the cocoa industry in Samoa, it is important the farmers are not only planting the right varieties but are also implementing best practices for drying and fermentation to ensure quality dried beans are produced.
In this regard, it is recommended to,

- Inform the various cocoa farmers of the findings from this study so they are encouraged to change their practices accordingly,
- Seek assistance from the various cocoa projects to provide fermentation boxes and build more solar dryers for the local farmers particularly those with large plantations,
- A National standard for dried fermented cocoa beans should be developed and used for local and overseas trading,
- Ensure farmers who will be supplying the Trade, Commerce and Manufacturing (TCM) cocoa value added project with SROS and WIBDI supply a consistent quality of fermented, dried beans to ensure a consistent quality cocoa mass product.

It is important to also start seeking markets for the cocoa mass product to ensure the efforts in building the supply side of cocoa, together with the fermentation and drying work is complemented with efforts to build the market for the resultant value added end products.

The last activity for the project is a workshop for cocoa farmers so the findings of the study can be shared and disseminated.

3.2.2.4 Trade Commerce & Manufacturing funded activities

Processing equipment –The first container with the first lot equipment from Italy has arrived and is now stored in the WIBDI warehouse (see photos below). They remain unpacked until the last lot of equipment arrives along with the technician to install and set up everything. The second lot or equipment is being arranged for air freight and is expected to arrive in the next quarter.

Figure 11: Various cocoa mass processing equipment from Italy.

Product development trials – The team produced cocoa mass (1kg) bars in preparation for the PNG trade mission which was unfortunately canceled. These bars still stored in the freezer for later use.

Research equipment – A Multiscan Series Food analyser has been acquired which can instantly test for fat, protein, and moisture in various food including cocoa products. A technician will deliver the equipment and conduct two-day training for the project staff. Other smaller laboratory equipment has also been acquired and received like food temperature probes and pH meters.

The frozen pathway for exporting local crops has gained momentum with many more exporters for Australia and also New Zealand now using the MAF pack house for processing frozen crops. The SROS' role now is only through the provision of technical assistance with the temperature data to assist with the overseas quarantine requirements.

3.2.2.5 FAO Youth Employment- product development Training.

The SROS signed a Letter of Agreement (LOA) with the Food and Agriculture Organisation (FAO) in early 2017 to deliver training to specifically "Build the capacity of youth and young farmers on value-added food processing practices." This LOA and associated activities are a part of the technical assistance funded through FAO for "Strengthening capacity of Youth for employment and livelihood in Agriculture."

The SROS specific outputs are:
1. Build capacity of youth and young farmers on value-added food processing techniques
2. Selected youth trained in marketing techniques for value-added products covered under the project

SROS will undertake the following **activities**:

1. Assist in the selection of youth and young farmers and produces for value addition
2. Train selected youth on value-added food processing techniques
3. Conduct pilot trial (production and marketing) for selected added value products (including breadfruits) for domestic markets
4. Prepare assignments report including a final financial report and submit to FAO.

Activities 1 and 2 were implemented this financial year.

The training included introduction to theory and general principles on value adding, food processing and preservation, food hygiene and safety, and HACCP. The core activities however focused on practicals for processing actual products through the preservation methods of freezing (taro, fa'i Samoa, pumpkin, breadfruit), dehydration for producing tea and spices (using turmeric, ginger and lemongrass), as well as making fruit jams from papaya and oranges. The main objective was to build the capacity of young farmers for simple value adding activities using agricultural produce grown and available locally with an overall aim of building the capacities of participants for income generating activities.

Figure 12: Food processing training, Mock company, herbal tea, and breadfruit fries

The programme included presentations from the Ministry of Commerce Industry and Labour (MCIL) as well as Small Business Enterprise Centre (SBEC) and also a visit to the MAF pack house at Atele to observe first-hand the facilities used for processing frozen crops for export.

The programme ended with the participants conducting a sensory evaluation of all the products produced by the mock companies established for the training. An evaluation undertaken at the end indicated a great appreciation by the participants for the opportunity provided to them to learn about value adding utilising the different crops, and also learning about the different processing techniques and equipment used.

The third activity for the project to be implemented will be the 'production and marketing trials' conducted by selected trained farmers for at least two products included in the training. The aim is to produce, package and market prototype products so young farmers and prospecting

business entrepreneurs can experience first-hand the issues involved in such an endeavour. The results of this activity will be shared through an end of project workshop for all the trained young farmers to complete this work.

Figure 13: Group 1 training participants with SROS' staff.

The intended project outcome is for selected youth and young farmers to have the necessary practical knowledge and technical capacity of food processing to produce value-added processed food products for domestic markets.

3.2.2.6 Banana flour processing trial.

The gluten- free flour market continues to grow every year with more and more consumers becoming more health conscious with their choices of food. Our breadfruit flour can only serve a small portion of this market as it is a seasonal crop but luckily we have an ample supply of bananas which has great potential to serve the same market. Banana flour is gluten free and is produced by various Asian countries such as Malaysia, Indonesia and the Philippines and can be found in many stores around the world.

This quarter three local varieties of bananas were collected for laboratory trials for making gluten free flour. The Fai-Palagi, Fai-Samoa and the Fai-Paka were bought from the Fugalei market. The bananas were prepared and subjected to the three different treatments below;

- unblanched and dip in citric acid
- blanched and dip in citric acid
- blanched only
- control or no treatment

Each banana treatment was dried in the dehydrating oven at 60^{0}C for 5-6 hours. The samples were later grounded and sieved. The flour samples were evaluated based on colour by visual inspection before they were used to make gravies and evaluated for taste.

The preliminary results found the Fai Paka (white variety) to be the most preferred both in terms of colour as well as taste. Interestingly it was the 'blanched only' sample which gave good results and this is encouraging in that it eliminates the use of preservatives in the processing of banana flour. Fai Paka is also not a highly favoured variety for consumption and this is another plus as families can sell their unwanted bananas for flour processing.

Figure 14: Banana flour samples

Most banana plantations were devastated by Cyclone Gita and our next trials are postponed until the crop is available again in the local markets.

3.2.2.7 FAO LOA: capacity building for SROS staff and farmers on post-harvest handling, value addition and agricultural marketing.

A new LOA was signed, implemented and completed this quarter between FAO and SROS for postharvest, value addition and marketing related activities focusing on breadfruit. The LOA was for a value up to SAT $84,800 with actual expenditures determining the actual total fund allocation

Conduct pilot trial (post-harvest handling and marketing) for breadfruit products

For this activity twenty-one farmers who were trained by the FSTD team for value adding and processing techniques received small value added start up packages for processing taro and breadfruit fries. There were 9 recipients from Savaii and twelve from Upolu.

Figure 15: Upolu farmers receiving their processing packages for making taro and breadfruit fries.

The pack consisted of the following items;

- 5 L deep fryer,
- Knives /peelers/chopping boards ,
- 50 sealable bags/ aprons,
- Box gloves.

Some of these young farmers run small eateries for school canteens and were quite thankful for the equipment as they can now start producing and selling breadfruit and taro fries as an addition to their menu.

Train four community groups for processing breadfruit for two days each (two in Upolu and two in Savaii)

The Food Science and Technology Division (FSTD-SROS) hosted a value added and food processing training for young farmers in January this year, also funded by FAO. From this training a common comment and feedback from the ladies who attended indicated the opportunity they see for their families if they can process the breadfruit fries and sell it considering it is an abundant and under-utilised crop.

This new LOA with FAO presented the opportunity for women groups to be trained on how to value add and process breadfruit and taro to a product they can sell for income generation. The Ministry of Agriculture and Fisheries (MAF) assisted in identifying the women groups for training and the rest was organised by the SROS team. Four women committees were selected, Faleasiu and Samatau from Upolu and Faia'ai and Fagamalo from Savaii.

This training consisted of three parts- theory presentation, practicals or hands on training for processing the frozen products and lastly, taste testing.

The main focus of the training was for the selected women groups to;

- Understand the importance of food safety and hygienic practices,
- Understand the theory and importance of food preservation methods with a focus on freezing,
- Be trained on how to process quality frozen breadfruit and taro products,

- Taste test final products and understand the importance of consumer feedback and;
- To understand the economic opportunities for families and communities when value adding to agricultural produce.

Figure 16: Theory sessions for Faleasiu and Fagamalo Committees.

Gifting of Training packs

The communities at the end of the programme were gifted with the following;

- one 450L chest freezer,
- two 5L deep-fryers,
- two chopping boards,
- two knives,
- two aprons,
- two boxes of gloves and
- 50 sealable bags.

The items will greatly assist the women groups start small business activities for producing frozen fries which they can sell directly to restaurant and hotels, or cook and sell in village schools and community gatherings like bingos. Some ladies have noted they will freeze their baked breadfruits for family consumption during off season.

Figure 17: Fagamalo Committee receiving their training packs.

To train people on new ideas and methodologies is good, but to train and equip them with the necessary tools makes a world of difference. These community training achieved both in that it provided not only the understanding but also the tools to allow application of this knows how.

The training achieved its targeted objectives as set out with the theoretical understanding and practical training for processing frozen products. The ladies expressed much appreciation of the content of the training with it being relevant and applicable to everyday life. They indicated that the new ideas and methodologies are things maybe as individuals they cannot do, but as a group such as women's committees are possible and easily achievable particularly now they have been presented with the required equipment. The community groups were all thankful, and hopeful similar training will come their way again.

Updates from two communities indicate the women groups in Fai'aai and Fagamalo in Savaii are already producing and selling both breadfruit and taro fries in their school canteens, community bingos and even to a nearby resort. We have also received requests from other community members who want an opportunity for their women committees to receive such training.

Conduct a market study in New Zealand and introduce products to potential outlets in Auckland.

SROS completed its research on breadfruit flour seven years ago and had been producing the product for small promotional and marketing activities both in the local and overseas markets. The research on the optimum processing of three frozen breadfruit products namely, uncooked slices, fries, and baked breadfruit was completed in 2016 with exporters now exporting the frozen slices only as part of their frozen crops to New Zealand and Australia.

Breadfruit is one of Samoa's staples, and Samoans remain to be the target market for breadfruit (fresh, frozen) exported overseas. With the development of gluten-free flour from this nutritious fruit the opportunity to expand the market for possible economic gains needs to be fully explored.

This market study builds on past work for these products and also aims to get some feedback on the potential for the two frozen breadfruit products in New Zealand, specifically with the Samoan food outlets. Breadfruit flour has great potential with the continually increasing demand for gluten-free products on the global market, and New Zealand remains to be one of Samoas major trading partners and closer markets.

Samoan restaurants for frozen breadfruit products.

Four well known Samoan eateries in South Auckland were identified and approached as recipients of the frozen breadfruit samples for use in their restaurants and to provide feedback. The frozen breadfruit, baked and fries samples taken for promotion were unfortunately discarded at the airport, but the restaurants were visited with plans to send more samples via air freight.

Figure 18: Evelina Restaurant in Clendon, Sunbell restaurant in Otara, Pinati's restaurany in Otahuhu, and Ulutoa & Sons Restaurant in Otahuhu.

Discussions took place with either the owners of the restaurants or their children present at the time of the visits. The purpose for the visit and the frozen breadfruit products involved were discussed before requesting if they were willing to take them on board for testing if more samples were to be arranged. All were very keen and appreciative of the opportunity to sell breadfruit products and indicated the willingness to take on not just a couple of bags as planned but more than 10 bags for each product for thorough testing in the market.

A couple of the restaurants commented on the variable and sometimes very poor quality of the uncooked frozen breadfruit slices they bought from some of the commercial consignments from Samoa. A big problem they found was immature fruits were being processed and sent over by some of the exporters. They were particularly very curious about the frozen baked breadfruit and how it will taste compared to a fresh baked breadfruit.

Later this quarter more samples of the frozen breadfruit products were prepared and sent to Honourable Magele Muailiu's office (Samoa Trade Commisioner in Auckland) for the restaurants above to trial. Fortunately the two chilly bins of frozen fries and baked breadfruit got through and were provided to Ulutoa and Sons for use. The feedback was very good with the owner commenting that baked frozen breadfruit was sold within a matter of hours. They were very impressed with the product saying they prefer this product for its convenience as it only requires a microwave for preparation. They have indicated they would like to receive this kind of product from Samoa in the near future as breadfruit is in high demand in New Zealand but low in supply.

For breadfruit flour more details are reported in section 'a' above but it was concluded from this study that;

- The market is definitely large but cost implications makes the bulk buyers and users of gluten free flour to be the most suitable target buyers for breadfruit flour from Samoa,
- The packaging, marketing and entry requirements to sell in supermarkets and specialty stores is too cumbersome for a product with many cheaper alternatives already on the market,
- For Samoa to take full advantage of breadfruit flour and its opportunities, the flour should not only be marketed on the basis of its gluten free status, but also its beneficial nutritional profile and suitability for paleo diet.

All things considered there is great potential for both the frozen breadfruit products and the breadfruit flour in the New Zealand market. The main issues appear to be ensuring product quality and minimising costs, must be tackled to ensure competitiveness in the market and ensure repeat consumer purchase for a successful breadfruit product trade.

3.2.3 Plant & Postharvest Technologies Division

The PFTD is responsible for Output 3 – Plant and Food Research and Development – and undertakes research and development on plant and food resources and their derived products of commercial interest and export potential, and enhancement of food quality and security to improve prospects of the national economy.

3.2.3.1 FAO Funded Work: TCP/SAM 3601 – Improving Smallholder Farmer Capacity to Market a Consistent Supply of quality and safe produce

Overall Objective: To improve the capacity of Samoan farmers to market a consistent supply of safe, quality food			
Sub-Objectives	Tasks	Achieved/Planned	Output
1. Carry out refresher workshops for farmers	1.1 Refresher workshop for Aleisa	Achieved	Farmers and market vendors refreshed their knowledge around postharvest handling and minimal produce processing
	1.2 Refresher workshop for Savaia	Achieved	
	1.3 Refresher workshop for market vendors	Achieved	
	1.4 Refresher workshop for Asau	Achieved	
2. Give out postharvest equipment for farm-based trials	2.1 Distribute collapsible crates to Aleisa farmers	Achieved	Farmers were shown how to use equipment and advised they need to provide feedback after trials re: ease of use of equipment
	2.2 Distribute cool boxes to Afega market vendors	Achieved	
	2.3 Distribute fruit harvesting equipment to Asau farmers	Achieved	
	2.4 Distribute wash stations to Ah Liki farms	Achieved	
	2.5 Distribute road-side vendor portable stall and harvesting equipment to Savaia	Achieved	
	2.6 Survey farmer use and farmer feedback on the usefulness of equipment distributed for improved postharvest handling	Achieved	PPTD Team visited all the farmers who were given equipment for farm-based trials and assessed the usefulness of equipment
3. Share results, learning and recommendation with key stakeholders	3.1 Host a 2-day seminar involving small-holder farmers, market-vendors, commercial farmers	*Next Quarter*	
	3.2 Deliver seminars to present and share results, learning and	*Next Quarter*	

	recommendations of project outcomes with key stakeholders		

Figure 17: Improving Smallholder Farmer Capacity to Market for a consistent supply of quality and safe produce.

3.2.3.2 ACIAR Funded Work: HORT 2014/077 – Enhanced Fruit Production and Postharvest Handling Systems in Fiji, Samoa and Tonga

Overall Objective: To increase the economic and disaster resilience of selected tropical fruit value chains			
Sub-Objectives	Tasks	Achieved/Planned	Output
1. *Optimize procedures for fruit assessments*	*1.1 Prepare Key for fruit assessment variables*	Completed	*Key prepared for: rot development, chilling injury, firmness*
	1.2 Carry out preliminary trials to test-run Key	Completed	*Staff trained on fruit assessments using prepared key*
	1.3 Carry out preliminary trials to train staff	Completed	
2. *Identify temperature for cool storage*	*2.1 Compare fruit quality and shelf life at 12C, 13C, 15C, 17C, 20C to fruit quality and shelf life at 25C*	Completed	*Identified optimal shelf life of fruits at 15C and 17C.* *At 15C, fruits became unacceptable after 25 days due to chilling injury* *At 17C, fruits became unacceptable after 20 days due to ripening*
	2.2 Identify temperature for chilling-injury onset in Samoan Ma'afala and Puou	Completed	*Identified that Samoan fruits start exhibiting chilling injury*

			symptomology at 17C after 1-2 weeks
3. Extend shelf-life of fruits using added treatments to cool storage	3.1 Carry out dummy trials using Bion sachets for shelf-life extension of breadfruit at 15C and 17C	Achieved	Identified logistical constraints (box sizes vs fruit sizes, sachet load, fruit load per treatment, etc.)
	3.2 Extend shelf-life of breadfruit at 15C using Bion sachets	*Next Quarter*	Could not be achieved in this quarter
4.	4.1 Build capacity for heat treatment at SROS to meet biosecurity requirements	Achieved	Dr. Seeseei Molimau-Samasoni was trained in the operation of hot air chambers that have been shipped from New Zealand Plant & Food Research Institute to SROS on a loan basis.
	4.2 Determine chamber program settings to achieve heat treatment of breadfruit at 47.2C within 6 hours	Achieved	Preliminary research activities were carried out to test maximum air settings, temperature ramp time times and treatment hold times for both Puou and Ma'afala
	4.3 Determine water bath temperature settings to achieve heat treatment of breadfruit at 47.2C	Achieved	Experiments were carried out to determine temperature ramp in breadfruit submerged in waterbaths held at 48.5C
	4.4 Devise a method for shower hydrocooling of breadfruit after heat treatments	Achieved	The team designed and put in place a shower hydrocooling system that is easily translatable
	4.5 Run a preliminary experiment of hot water treatment versus hot air treatments	Achieved	The team were able to run a preliminary experiment utilizing 144 Puou and 144 Ma'afala across 3 treatment conditions and 3 replicates comprising 15 breadfruit each

		North East Coast				North Coast				
		Farmer 1	Farmer 2	Farmer 3	Average	Farmer 1	Farmer 2	Farmer 3	Average	Reason Discarded
25°C	Puou	6.1	6.3	6.3	6.2	6.3	6.1	6.3	6.2	Ripening
	Maafala	6.6	6.8	6.9	6.8	6.0	6.2	6.4	6.2	Ripening
20°C	Puou	10.4	10.9	10.6	10.6	11.4	10.2	9.8	10.5	Ripening
	Maafala	11.3	10.9	10.3	10.8	11.2	9.8	10.7	10.6	Ripening
17°C	Puou	17.2	19.0	17.4	17.9	21.0	20.3	18.8	20.0	Ripening & Chilling Injury
	Maafala	18.4	21.5	20.8	20.2	21.2	20.3	20.6	20.7	Ripening & Chilling Injury
15°C	Puou	15.4	17.6	14.9	16.0	15.5	12.5	16.0	14.7	Chilling Injury & Rot Development
	Maafala	19.2	18.4	15.6	17.7	23.6	22.7	24.9	23.7	Chilling Injury, Rot Development & Ripening

Figure 18: Enhanced Fruit production and Postharvest handling Systems

3.2.3.3 SROS Funded Work: Samoan Medicinal Plants Project

Overall Objective: To screen multiple medicinal plants for bioactivity of relevance to the Samoan scenario			
Sub-Objectives	Tasks	Achieved/Planned	Output
1. *Put in place a concept note for MNRE and MAF information regarding the use of natural resources (plants and marine organisms)*	*1.1 Prepare Concept Note*	Completed	*Concept note was put together comprising project aims, project justification, project timeline and benefits*
	1.2 Circulate to MNRE and MAF	Achieved	*MNRE and MAF are aware of SROS interests and intentions to sample plants and marine organisms for this project*

2. Obtain a sampling approval from MNRE and MAF	*2.1 Lodge an application to MNRE for Sampling LoA*	Achieved	*Awaiting the approval of an LoA for sampling*
3. Commence sampling of medicinal plants	3.1 Identify sampling sites under MNRE jurisdiction (botanical gardens, national parks, national reserves)	*Next Quarter*	
	3.2 Identify sampling sites under MAF jurisdiction (marine reserves)	*Next Quarter*	
	3.3 Identify sampling sites for plants that cannot be collected from MNRE and MAF sites (private landowners)	Achieved	Samplings sites were identified from Saleimoa, given a history of sampling from there and staff connections in the village
	3.4 Start sampling of medicinal plants	Achieved	The PPTD team was able to collect 11 samples from the above private landowners
	3.5 Prepare extracts of medicinal plants selected	Achieved	Aqueous and methanolic extractions of the collected samples were carried out
4. Assess bioactivity of Samoan medicinal plant extracts	4.1 Carry out antimicrobial activity assays of Samoan medicinal plant extracts prepared in 3.5	*Next quarter*	
	4.2 Carry out anti-enzymatic activity assays of Samoan medicinal plant extracts prepared in 3.5	*Next quarter*	

Figure 19: Medicinal project with PPTD staff

3.2.3.4 US Embassy Funded Work: Cocoa Phylogenetics Project (COMPLETED)

Overall Objective: To collage genotype data for trees reported in ACIAR PC/2014/032 together with morphological data and aroma profiles of selected cocoa varieties to identify elite Samoan varieties for mass distribution			
Sub-Objectives	Tasks	Achieved/Planned	Output
1. Collect morphological data of genotyped plants	*1.1 Visit selected cocoa plantations and re-tag genotyped trees*	Completed	*Identified the plants of interest for future work*
	1.2 Collect tree, leaf, pod, bean and flower morphological data for Auala Plants	Achieved	Collected information, some missing data due to poor tree yield
	1.3 Collect tree, leaf, pod, bean and flower morphological data for Vaisala Plants	Completed	*Collected information, some missing data due to poor tree yield*
	1.4 Collect tree, leaf, pod, bean and flower morphological data for Papa Sataua Plants	Completed	*Collected information, some missing data due to poor tree yield*
	1.5 Collect tree, leaf, pod, bean and flower morphological data for Falealupo Plants	Achieved	Collected information, some missing data due to poor tree yield
2. Obtain cocoa sensory profiles of selected plants	2.1 Carry out bean fermentation of Auala Plants	Achieved	Modified procedure due to poor tree yield
	2.2 Carry out bean fermentation of Vaisala Plants	Achieved	Poor tree yield
	2.3 Carry out bean fermentation of Papa Sataua Plants	Completed	*Modified procedure due to poor tree yield, beans sent off for sensory analyses*
	2.4 Carry out bean fermentation of Falealupo Plants	*NA*	Poor tree yield
3. Complete Project	3.1 Technical Report	Achieved	Reports completed and submitted to US Embassy
	3.2 US Embassy Report	Achieved	
	3.3 US Embassy Financial Report	Achieved	

Figure 19: Identify Elite Cocoa varieties and the final report.

Project Conclusions: The project initially set out to define a correlation between genotype, phenotype and fine-flavour attributes of cocoa based on cocoa sensory profiles. However, the genotyped trees were aged, and consequently had poor yield. As a result, we were unable to carry out realistic fermentation of cocoa to determine their cocoa sensory profiles. Thus, a correlation could not be made. Nevertheless, the PPTD team has made amends towards this shortcoming, by grafting cocoa of Criollo genotype onto new rootstock, so that yield could be increased and this should in the next 4 years allow for the determination of a sensory profile of genotyped cocoa.

3.2.3.5 FAO Consultancy for Breadfruit (New Project, COMPLETED)

Overall Objective: To gain capacity by participating in a study tour of the breadfruit industry and Fiji and to train breadfruit farmers in Upolu and Savaii on the fresh breadfruit export value chain.			
Sub-Objectives	Tasks	Achieved/Planned	Output
1. Participate in a study tour of the Fijian breadfruit industry	1.1 Study tour of Nature's Way Cooperative	Achieved	The Government, Ministry of Agriculture and Fisheries and SROS should actively promote the uptake of breadfruit orchard farming system to ensure a reliable supply of breadfruit to support the market and ensure the ready availability of market-preferred planting material which will allow for a consistent supply of breadfruit, as well as implement best practice postharvest
	1.2 Study tour of Fiji breadfruit orchards	Achieved	
	1.3 Study tour of Fiji breadfruit exporter pack houses	Achieved	
	1.4 Study tour of Ministry of Agriculture Fiji (MAF) Sigatoka Orchards	Achieved	
	1.5 Study tour of CePaCT and its Breadfruit Research	Achieved	
	1.6 Study tour of the Agricultural Marketing Authority of Fiji	Achieved	

			handling for fresh breadfruit exports.
	1.7 Submit report on the Study Tour	Achieved	A report in the form of a presentation was submitted
2. Capacity building of smallholder breadfruit farmer in the fresh breadfruit export value chain	2.1 Theory training/workshop for breadfruit farmers in Upolu	Achieved	The purpose of this workshop was to engage farmers in discussions around growing breadfruit in commercial orchard farming systems to ensure a consistent supply of breadfruit for the market, to improve farmer postharvest handling awareness and skills, and to provide farmers with an understanding of the whole value-chain of fresh breadfruit targeted for export to New Zealand. The farmers found the trainings very helpful, and requested for more trainings to be carried and for them to be inclusive of more farmers. Refresher trainings were also requested.
	2.2 Practical training for breadfruit farmers in Upolu on air-layering breadfruit	Achieved	
	2.3 Practical training for breadfruit farmers in Upolu on harvesting breadfruit	Achieved	
	2.4 Practical training for breadfruit farmers in Upolu on breadfruit postharvest handling	Achieved	
	2.5 Theory training/workshop for breadfruit farmers in Savaii	Achieved	
	2.6 Practical training for breadfruit farmers in Savaii on air-layering breadfruit	Achieved	
	2.7 Practical training for breadfruit farmers in Savaii on harvesting breadfruit	Achieved	
	2.8 Practical training for breadfruit farmers in Savaii on breadfruit postharvest handling	Achieved	

Figure 20: Consultancy Activities: Fiji Tour, and Upolu & Savaii sessions for farmer training

3.2.3.6 ACIAR Funded Work: HORT 2017/014 Fresh Samoan Taro Market Access to Australia

Overall Objective: To provide evidence to support an application by Samoa for market access for fresh taro to the Australian market			
Sub-Objectives	Tasks	Achieved/Planned	Output
3. *Determine the survival of sporangia under different conditions*	*3.1 Survival of sporangia under wet conditions*	Completed	*Identified optimal conditions for sporangial suspension inoculation, and proved theory with the non-viability of Pc when dried (i.e.: Pc requires moisture for establishment and survival)*
	3.2 Survival of sporangia under dry conditions	Completed	
	3.3 Survival of sporangia under wet/dry conditions for different times	Completed	
4. Methodology for the inoculation of fresh taro corms	*4.1 Trial surface inoculation of whole corms without wounding*	Completed	*Identified that surface inoculation does not work, and optimized*

	4.2 Trial surface inoculation of whole corms with wounding	Completed	*surface sterilization techniques for successful inoculation with wounding*
	4.3 Optimize surface inoculation of whole corms with wounding	Achieved	A manuscript is currently being prepared for the findings from this work
	4.4 Trial surface inoculation of taro blocks	Achieved	
	4.5 Experiment on *Pc* survival in whole corms with surface wound inoculation	Achieved	
	4.6 Experiment on *Pc* survival using taro blocks	Achieved	
	4.7 Optimize personnel process and approach to experiment	Achieved	
5. Survival of *Pc* under freight conditions	5.1 Survival of *Pc* from whole corms after storage at 4C for 1 week	Achieved	*Pc* inoculated into corm was resuscitated post 4C storage. *Pc* inoculated onto taro blocks continued growing after removal from 4C
	5.2 Survival of *Pc* from taro blocks at 4C for 4 days	Achieved	
	5.3 Survival of *Pc* from whole corms after 3 weeks	Achieved	
	5.4 Optimize personnel process and approach to experiment	Achieved	
6. Investigate the natural infection of taro corms pre-harvest	*6.1 Plant taro plants varieties of interest to the project*	Completed	*Taro of multiple varieties are successfully growing and awaiting utilization*
	6.2 At 6-months, inoculate petioles and soil with sporangial suspension	Achieved	
	6.3 Monitor rot development after 1 week of inoculation	Achieved	
	6.4 Prepare plot of taro (lauvai) at SROS for field inoculation	Achieved	
	6.5 Prepare plot of taro (matured @ 6 months) at MAF Crops (Nu'u) for field inoculation	Achieved	

	6.6 Prepare potted taro to be grown in the greenhouse for field inoculation at SROS	Achieved	

Figure 21: Experimental taro corms and taro blocks

3.2.4 Environment & Renewable Energy Division

The ERED is responsible for Output 2 – Sustainable Management of Renewable Energy Resources and Environment – and researches the scientific development and sustainable management of renewable energy resources, and the evaluation of the environmental stability of agricultural practices and other related activities.

3.2.4.1 Sustainable growth of Fragrant plants for Poverty Reduction – essential oil extraction

The ERED team is continuing its working collaboration with local small businesses whom were interested in the production of essential oils. This collaboration indicated to SROS the assistance given to these small local businesses is of great benefit to these businesses.

Figure 22: Director of Fuatino Oil, Mr uaea Apelu

3.2.4.2 Orchid Propagation Project

As a part of ERED work on orchid propagation ERED is continuing to look after and nurture the orchids collected from Savaii and around Upolu inside the green house at SROS. The study on wild orchids carried out gives us an indication of favorable conditions these species thrive upon, especially the percentage of sunlight exposure. Later on the possibility of cross pollination with imported species from Thailand and Japan is targeted for investigations to produce more newly established orchids for Samoa's flower businesses.

Figure 23: Orchids Species Identification visit in Savaii.

Figure 24: Local Orchids in SROS' Green House

Figure 25: Introduced orchids inside SROS' Green House

ERED has continued on working together with local nursery owners to learn and exchange information on orchid species and business in Samoa. Outcomes from these exchanges with the local flower growers have proven to be of great value to the development of the work conducted in SROS and has also improved the relationship between SROS and its local partners.

Figure 26: Agnes Florist at Vaivase

3.2.4.3 International Union for Conservation of Nature – Funded Bioenergy Project

Through the National Energy Coordination Committee SROS is continue working in collaboration with government ministries to developed protocols for data collection for a database on energy demand and supply dynamic in Samoa.

From previous projects funded under IUCN. International consultants are working together with energy sector stakeholders including SROS to layout this pathway for a clear vision of energy use and future forecast in energy developments.

3.2.4.4 Fruit Spirits

SROS has now finalized its whiskey product with the intention of launching before the end of this year. The Samoa Whiskey brand was officially accepted by cabinet in February 2018.
Currently SROS continuing its whiskey production using the 16 distillers bought from NZ and aged in charred oak barrels bought from USA. This product is being finalized and is proposed for launching in late August 2018.

At this stage SROS management is now working to achieve all necessary preparations for this product to be successfully launched and find partners or uptakes when possible.
During this period SROS is also looking into developing a brand portfolio for all its alcoholic beverages, which included whiskey, rum, brandy and liquors.

Figure 27: Distillers and Barrels funded by the Korean Fruit Wine Project

3.2.4.5 Water Sector Support

SROS is continuing its working relations with the Ministry of Natural Resources and Environment as the technical arm to carry out research and assessments for the environment, energy and especially the Water Sector.

Figure 28: MNRE Water Sector Project.

SROS is continuing working together with partners within the water sector for water streams monitoring and analysis of waterways around Samoa. SROS ERED team does the field testings and monitoring and report back to the water sector with results to assist with regulatory framework developments work clean and accessible water in Samoa.

3.2.4.6 Biomass Project

Under the EUGIZ project for Biomass Gasification initially, lead by the Ministry of Finance under its Energy coordination division Ministry of Natural Resources and Environment is now coordinating another part of this project under its Renewable Energy Division as the IMRESS Project. This project further looked at a demonstration plan and plant for biomass gasification in STEC as initially developed through the EUGIZ project. Under this wing of the biomass energy project, SROS is the technical advisor in relations to environmental assessments and feedstock evaluation. The main stakeholders for this project are, MNRE, STEC, EPC, and Office of the Regulator, MOF, and SROS.

3.2.4.7 Biomedical Research; Enzymatic Inhibition Pathway'

ERED has now re-continued its biomedical research project which was on hold for some time. The initial work revolves around three enzymes, lipase, tyrosinase and alpha-glucosidase. These enzymes are seen as major causes of some of the diseases affecting our people today. With the reviewed workplan ERED has now focused its research on screening plant ethanolic extracts for alpha glucosidase inhibitors.

As of July 2018 more than 80 plant materials have been extracted and screened using the enzymatic assay for alpha glocusidase. From the 80 plants screened 15 candidates were selected that shows the highest efficacy as inhibitors for alpha glucosidase enzyme.

4. Progress in achieving the Corporate Plan (CP) for the year

Priority Objectives	Activity	Achievements
1. To promote the national economy of Samoa based on research and development.	• TCP/SAM 3601 Project on Improving Farmer Capacity to Market a Consistent Supply of Quality and Safe Produce (PPTD)	• Farmers were given postharvest handling equipment to trial. The rationale behind this activity was to provide farmers with technologies and methods to harvest produce safely for the maintenance of produce quality. This will improve farmer capacity and increase their monetary returns, which in turn promotes the national economy of Samoa
	• ACIAR HORT 2014/077 Project on Enhanced Fruit Production and Postharvest Handling Systems for Fiji, Samoa and Tonga (PPTD)	• Research was carried out to identify optimal temperature for long-term storage of fresh breadfruit. Additionally, preliminary research has been undertaken to combine requisite quarantine heat treatments and cool storage to determine the shelf-life of fresh breadfruit. These research efforts are in support of Samoa gaining access to the significant market for fresh breadfruit in New Zealand. Gaining access to this market will improve Samoan economy through an increase in export.
	• ACIAR HORT 2017/014 Project on Defining Biotic Constraints for Market Access of Fresh Samoan Taro to Australia (PPTD)	• Investigations into determining the ability of Phytophthora colocasiae to infect taro corms commenced in this financial year. This involved research activities into P. colocasiae survival on taro corm surfaces, survival of P. colocasiae at cool temperatures, P. colocasiae pre-harvest and postharvest
	• US Embassy Project on Correlating Cocoa Genotype, Phenotype and Sensory Pr.	• We attempted to correlate various cocoa characteristics to identify cocoa trees in Samoa with fine-flavor attributes that are favored by the cocoa market. However, it was determined that cocoa trees that were previously genotyped were too old

		to bare sufficient pods that would support fermentation activities. Trees were therefore grafted for future work.
	• Gluten-free Breadfruit Flour.	• The snacks made from breadfruit flour for the Pacific Islands Leaders Meeting held in Japan received great feedback. The same type of snacks was prepared for tasting by students was also well received. The product development building which will house the equipment for trial commercialization of breadfruit flour has been completed. The new and old ovens plus all associated equipment for flour processing has all now been relocated to the new building.
	• Avocado Oil and coconut Margarine.	• The tender for the multipurpose processing equipment for producing avocado and coconut margarine was conducted this year.
2. To undertake scientific and technical research with the primary aim of adding value to local resources and services.	• SROS Project on Screening the Bioactivity of Samoan Medicinal Plants to Identify Plants with Pharmaceutical Potential (PPTD).	• Discussions are underway with the Ministry of Natural Resources & Environment to facilitate SROS sampling and collection of Samoan medicinal plants. It is anticipated that the determination of bioactivity from Samoan medicinal plants will add value to Samoas flora and fauna promote their potential as sources of pharmaceutical products.
	• PHAMA and TCM/EIF-funded cocoa value adding.	• This project report was completed and submitted to the PHAMA office in Suva upon receipt of cocoa evaluation results from both Ola Pasifika and the Queensland Department of Agriculture laboratory. The revival of the cocoa industry in Samoa involves the amalgamation of all value chain factors from supply, to postharvest to processing and marketing.

	• Capacity Building for SROS staff and farmers on post-harvest handling, value addition, and agricultural marketing.	• Twenty-one farmers who were trained by the FSTD team for value adding and processing techniques received small value-added start-up packages for processing taro and breadfruit fries. There were nine recipients from Savaii and twelve from Upolu.
3. To develop functional prototypes of products and processes based on scientific and technical research for the local or overseas markets.	• Sustainable growth of fragrant plants for Poverty Reduction-Essential oil extraction.	• Continue to work with local small businesses for production of essential oils. Distributed distillers to local businesses to for production of essential oils.
	• Biomass project-IMPRESS project for biomass gasification through the EUGIZ project.	• SROS is the technical advisor in relations to environmental assessments and feedstock evaluation.
	• Conduct a market study and introduce products to potential outlets in Auckland.	• SROS completed its research on breadfruit flour seven years ago and had been producing the product for small promotional and marketing activities both in the local and overseas markets. The frozen breadfruit, baked and fries samples taken for promotion were unfortunately discarded at the airport, but the restaurants were visited with plans to send more samples via air freight.
4. To establish partnership with the private sector and commercial interests to support the Organization's activities.	• TCP/SAM 3601 Project on Improving Farmer Capacity to Market a Consistent Supply of Quality and Safe Produce (PPTD)	• Refresher trainings were carried out for the small-holder farmers and market vendors, to ensure sustained relationships with farmers around our postharvest handling of vegetables, fruits and root crops.
	• FAO Breadfruit Project on Improving Farmer Capacity within the Fresh Breadfruit Value Chain for Export (PPTD).	• Partnerships with farmers were also fostered through establishing relationships with breadfruit farmers who were trained on the Fresh breadfruit

		value chain with a focus on market expectations from New Zealand.
	• Waterfront project- Testing laboratories are contracted by MNRE to provide microbiological analysis to determine the quality of the water targeted by the Apia Waterfront Development Project.	• Continue working closely with the MNRE to test the soil and water samples for the wtaerfront project. • As a result, batch of sixteen samples sites were collected and tested by the Technical services micbiollogy laboratory. The water quality assessment is based on the enumeration of pathogen indicators namely E. coli and Enteroccoci for fresh and marine waters respectively. Conductivity and pH are also measured as a supplementary part of the analysis.
	• Bottled Water Monitoring Programme with MOH. The Microbiology laboratory, through the employment of its accredited water testing methods, continues to assist the Ministry of Health (MOH) in their bottled water company (BWC) monitoring programme.	
	• International Accreditation. SROS' chemistry and microbiology laboratories are accredited by International Accreditation New Zealand (IANZ) in accordance with the Standard ISO 17025:2017	• Our laboratories have successfully maintained accreditation status for eight consecutive years. • Furthermore, we are currently the only accredited testing laboratory in Samoa, and one of only two in the Pacific. • For this financial year there were seven Inter laboratory Comparison Programmes (ILCP) every calendar year. They were Meat and Bone Meal Chemistry, Food Microbiology, Chemistry, Watercheck Microbiology, Pathogens Microbiology, Mercury and Histamine proficiency programmes.

		Satisfactory results were achieved in all programmes
5. To ensure effective training for researchers and technical research.	• Staff development activities were the trainings offered by Universities, and research institutions. Moreover, visiting technical scientists offered trainings on scientific tools and methodologies.	• Five fully funded trainings offered by Donor partners. Visiting technical specialists, and Professor Kenji from the JICA program assisted SROS scientists for new methodologies to carry out new researches.
6. To augment and effectively manage financial and human resources of the organization.	• Audit for the FY16-17 completed and submitted to the cabinet and the parliament.	• SROS presented its FY2016-2017 annual report to the Cabinet and the Parliament.
	• Implement financial internal controls manual.	• Implement manuals to control and manage the procurement process, and payment procedures for SROS.
	• Presented financial reporting to the Ministry of Public Enterprises, and SROS' Board of directors.	• Prepare quarterly reports and submitted to the Ministry of Public Enterprises in every quarter of the FY2017-2018.
	• Complied with the Public Finance Management Act.	• Able to follow and adhere to the financial procedures stated in the PFMA. In addition, all travels were referred to the MPE, MFAT, and MOF for travel reports, and to the cabinet for the final approval.
	• Preparation of the Annual Budget FY2017-2018, and managing of project funds.	• Follow the budget calendar and process from the Ministry of Finance. Able to submit the annual estimates within the timeframe and participated the budget discussion with the Ministry of Finance. Fully cooperated with the Ministry of Finance in managing the project funds that were managed by its Aid and Coordination division.
	• Updated the Human resource manual, and	• Reviewed SROS' HR manual that contain all policies to guide the Human resource

	organise trainings for the technical staff.	work activities. This manual was prepared by the Management and approved by the Board of Directors. Prepared travel documents for technical staff, and process through the travel and training policy of the government.

5. FY2017-2018 Budget Performance Measures Indicators.

5.1 Technical Services Divisions

Technical Services Division	Baseline Data	2017-18	Achievements
Performance Measure/Indicator	Baseline (Base Year)	Budget Standard or Target	Budget Standard or Target
Number of new accredited analytical tests added to the scope of accreditation	N/A	3	Partially Achieved: Two new methods were added to the scope of the accreditation, namely Entrococci analysis for effluent water and seawater., and Energy Content in Food and Food Products. Addition of tests to the scope of accreditation is a costly process, SROS considers accrediting a test when there is a need and demand.
Number of new clients/customers provided samples to test using SROS capacity	N/A	5	Achieved: Pacific Trade Invest, Vai Lata, Tautua Nonu Samoa, Samoa Nonu Delights, Sula's Bakery
Number of technical service contracts with stakeholders in technical analysis	N/A	3	Achieved: Waterfront Water Quality Analysis (MNRE), Water Quality Analysis (Taumesina Island Resort),
Number of awareness on the technical capabilities of SROS	N/A	3	Achieved: TV Advertisement on Technical Services, Morning Radio Talk Show, SROS Visitation by Schools and public
% growth in revenue for SROS	N/A	10%	Achieved: Cost recovery of $151, 294 was surpassed
Number of funded new analytical equipments	N/A	2	Achieved: Two autoclaves were purchased under a fund from Water Sector Budget (MNRE)
Number of Ministries/Organisation using SROS technical services	N/A	3	Achieved: National University of Samoa, Ministry of Health, Ministry of Police, Ministry of Revenue, MNRE

5.2 Plant & Postharvest Technology Division

Plant & Postharvest Technologies Division	Baseline Data		
Performance Measure/Indicator	**Baseline (Base Year)**	**Budget Standard or Target**	**Comments**
Number of new plant & postharvest research project proposals approved by the Board	NA	1	A research proposal on *Improving the Capacity of Breadfruit Farmers* was prepared but was not lodged with the Board. Instead, because of time limitations, this was lodged directly with the funding body to seek funding for the project (FAO).
Number of funded research projects successfully implemented at the various agreed milestone phases.	NA	2	*TCP/SAM 3601 Project*: PPTD has achieved milestones within this project through the delivery of workshops, refresher courses and the distribution of equipment to small-holder farmers for farm-based trials. ACIAR HORT 2014/077 project: PPTD has made progress through establishing the temperature for chilling injury onset and has commenced reserach into heat treatnebts to meet biosecurity requirements. ACIAR HORT 2017/014 Project: PPTD has made goor progress with this project, having carried out reserach activities under the project. US embassy Project: PPTD has completed this project whereby it was tasked with the identification of elite cocoa varieties for Samoa.
Number of scientific papers / technical reports published on research findings	NA	1	PPTD has 2 manuscripts in preparation based on results from their research activities. Molimau-Samasoni et al (2018) Effect of low temperatures on the storage life of Samoan Breadfruit Artocarpus altilis. Maslen-Miller et al (2018) Symptom expression of Phytophthora colocasiae in inoculated corms.
Number of consultancy service contracts with stakeholders in plant & postharvest research areas	NA	1	PPTD managed to secure a consultancy project funded by FAO to prove trainings to breadfruit farmers, to improve their capacity and knowledge in the complete value chain for exporting fresh breadfruit to New Zealand.
Number of research project progress reports to stakeholders as part of SROS quarterly reporting	NA	4	Progress reports on all of PPTD's active projects were prepared and formed part of SROS's quarterly reports in the financial period July 2017- June 2018.

5.3 Policy Advice to the Minister/BDO

Policy Advice to the Minister/BOD	Baseline Data	2017-18	
Performance Measure/Indicator	Baseline (Base Year)	Budget Standard or Target	Comments
Satisfaction level & quality of advice provided to the Board of Directors & Minister (on scientific research & technological development policies & strategies) based on Board Meeting Minutes approvals held & Cabinet submission approvals (FKs) on hand.	NA	70%	80% achieved include Board of Directors nine meeting during the financial year to discuss and approve the proposals submitted by SROS management. All travel requests were approved by the Board of Directors and forward to the MOF and MPE for travel reports to the Cabinet. Refer to the Board of Directors decisions by the cabinet, and Minsiter's requests for funding.
Number of key research development project proposals with demonstreble outcomes in economic & social benefits approved by the Board	NA	2	The construction of the breadfruit flour new building. This new capital development provided positive outcomes for the production process of the breadfruit flour and other new products. Another key research development was the taro whiskey that will assist the taro farmers and local businesses.
Number of patents for new product ideas developed.	NA	1	SROS has been working with MCIL this year to patent its existing and new products. Mr Frik from the NZ volunteer program offered his services to train SROS' business specialists to organise and prepare patent and trademarks application documents for SROS.
Number of conferences coordinated in science and technology to broadly cover SROS's research mandate.	NA	2	SROS was highly involved in the Breadfruit Summit in December 2017. The summit was called the Home of the Ma'afala Pacific and Global Breadfruit. Ma'afala is the most resilient and best among the best of breadfruit in the world.
Number of collaborative partnership links and/or contracts @ local & international level (to enhance research outputs) approved by the Board	NA	1	Professor Kenji from Japan continues as the key technical adviser for SROS scientists. Approved Senior Staff work attachemnets with Universities in NZ, and attended product promotion in overseas.
Number of external funding commitments secured for research projects	NA	2	Secure funding from the FAO for the PPTD and FSTD researches. Also project funds for the TCM II cocoa project from the MCIL.
Date by which financial statements are submitted to the Controller & Chief Auditor	NA	31 October 2018	30th October 2018
Date by which audited Annual Reports are submitted to the Ministry of Finance.	NA	30 November 2018	30-Nov-18
Date by which the 4 Year Corporate Plan is reviewed & submitted to the Minister of SROS.	NA	31 March 2019	31-Mar-19

5.4 Environment &Renewable Energy Division

Environment & renewable Energy Division	Baseline Data	2017-18	Achievements
Performance Measure/Indicator	Baseline (Base Year)	Budget Standard or Target	Budget Standard or Target
Number of research projects/work proposals in environmental impact & renewable energy areas, approved by the Board	NA	2	1 report and 1 report is pending (IEE with STEC/ MOF)
Number of funded research projects successfully implemented at the various agreed milestone phases	NA	2	2 (IEE with STEC/ MOF) and Water Sector monitoring
Number of seminars conducted on research project findings	NA	1	
Number of scientific papers/technical reports published on research findings	NA	1	2 reports (Biogas Technical report and Biomass evaluation technical report)
Number of consultancy service contracts with private sector & Govt ministries/bodies.	NA	1	1 report (IEE with STEC/ MOF)
Number of research project progress reports to stake holders as part of SROS quarterly reporting	NA	4	Four SROS Quaterly reports and 1 Fruit Spirit Report to CDC

5.5 Food Science Technology Division

Food Science Technology Division	Baseline Data	2017-18	Achievements
Performance Measure/Indicator	Baseline (Base Year)	Budget Standard or Target	Budget Standard or Target
Number of proven technological processes for new product development activities approved by the Board.	NA	1	2 (tea and cocoa spread)
Number of new prototype products developed from research findings at the various agreed milestone phases.	NA	2	3 (herbal tea, dessicated coconut, cocoa spread)
Number of research outcomes uptaken by the Private Sector and stakeholders	NA	1	1 (Breadfruit and taro fries by communities)
Number of scientific papers / technical reports published on research findings	NA	1	3 (PHAMA cocoa report, FAO funded report on the market study for breadfruit products in Auckland, FAO funded training for communities for
Number of consultancy service contracts with Private Sector, Government ministries/bodies, Regional & International Agencies.	NA	1	2 (FAO and PHAMA)
Number of research project progress reports to stakeholders as part of SROS quarterly reporting	NA	4	4 (quaterly reports and technical reports)

6. Overview of financial performance and financial results for the year

6.1 Financial Performance- Revenue

SROS received a total revenue of 4.3 million tala in the financial year 2017-2018. SROS' revenue sources consist of government grant, technical services fees, donor project income, and other income. The government grant contributed to 75% of the total income received and 25% was from other sources.

Table 1: Breakdown of revenue received by SROS in the current financial year.

Income Sources	FY2017-2018	FY2016-2017
1. Grants from Government of Samoa	3,243,944.00	3,317,148
2. Technical Services	232,775.00	133,837
3. Donor Project Income	485,165.00	559,605
4. Other Income	97,433.00	85,416
Total	**$ 4,059,316**	**$ 4,096,006**

Table 1: SROS' Income Sources for FY2017-2018 & FY2016-2017

Table 1 illustrates the distribution of total income received by SROS according to sources. The financial year 2017-2018 revenue is slightly decreased by (5%) compared to the last financial year 2016-2017. Revenue increase generated from income collected by the technical services division through its usual tests performed including the MNRE waterfront project samples.

6.2 Financial Performance – Personnel

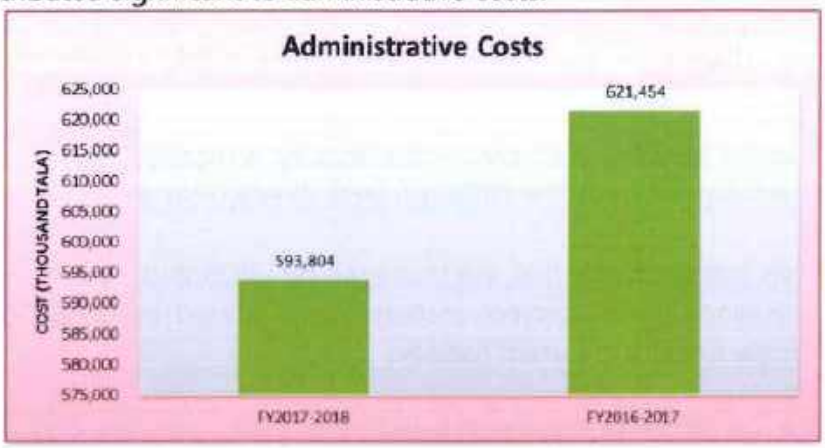
The total personnel costs for this financial year was 2,096,238 million tala and 89% was spent on the payment of salaries and wages. The total salary and wages were increased by 155,363 tala compared to the last financial year 2016-2017 mainly due to the recruitment or new employees. The comparison of the personnel costs between the current and last financial year are demonstrated in bar graph 1.

Graph 1: Comparisons of Personnel Costs

6.3 Financial Performance –Operating (occupancy and Administrative Expenses)

Bar graph 2 shows the comparison of occupancy costs between financial years 2017-2018 and 2016-2017. Electricity was noted to be the highest occupancy cost which added up to 206,556 tala.

Bar graph 3 illustrates the comparison of administrative costs between financial years 2017-2018 and 2016-2017. Costs for repairs and maintenance of buildings, rental and hire, printing and stationaries contributed significant to administrative costs.



Graph 2: Comparison of Administrative Costs

Graph 3: Comparison of occupancy costs

6.4 Capital expenditures and projects

The major capital expenditure for this financial year was the construction of the breadfruit multipurpose processing building which added up to a cost of 145,000 thousand tala. The new building was completed in June 2018.

Other projects that were solely funded by SROS included the renovations of the laboratories and office buildings as well as the maintenance of all buildings within its compound.

6.5 Projects (Donor funded and others)

SROS has the following project accounts.

1) Account at ANZ bank – this account is managed by SROS and donor partners deposit funds directly to SROS.
2) Account at the Ministry of Finance – this account is managed by the Ministry of Finance and donor partners deposit funds for SROS' projects directly into the government's main account.

Table 2 shows project funds that are managed by SROS and those currently managed by the Ministry of Finance. SROS' project account was reported inside SROS' financial position as deferred income under the current liability.

Projects funds managed by Ministry of Finance		**Projects funds managed by SROS**	
Project Donor Name	**Total**	**Project Donor Name**	**Total**
1. Turkey Grant (Ethanol Project)	50,202.00	1. SPC / PARDI Fund	121,217.00
2. IUCN Biodiesel Project Funds- MNRE.	23,283.00	2. Coconut Oil Refinement Fund.	270,769.00
3. Turkey Grant (Breadfruit Project)	4,467.00	3. Avocado margarine Fund	193,633.00
4. Republic of Korea – Fruit Wine Project	69,687.00	4. PHAMA- frozen Taro Project Fund	5,263.00

5. Japanese Embassy-Sustainable Growth of Fragrant Plants for Poverty Reduction	26,154.00	5. PHAMA- Cocoa Fermentation project Fund	3,214.00
6. ACIAR funded regional fruit tree project	831.00	6. FAO Consultancy Fund	63,447.00
		7. TCM EIF Tier 11 Project Fund	259,929.00
		8. Photosynthetic Bacteria research Fund.	4,961.00
		8. Water supply & sanitation Fund-MNRE.	17,779.00
		9. PHAMA Cocoa	15,682.00
		10. Cocoa Phylogenetics.	1,266.00
		11. FAO LOA	19,845.00
		12. FAO Youth	30,802.00
		13. ACIAR project 2017/044	6,906.00
		14. SIDS Donated Assets	46,199.00

Table 2: Distribution of project funds according to the managing institutions.

7. Human Resource Development.

7.1 Overseas Training/Workshops/Official Visits/Seminars

SROS received five fully funded training and workshops for its staff within the current financial year. These training assistances were offered through either directly from the financier donor, Ministry of Foreign Affairs or the Ministry of Public Services Commission.

All trainings/workshops must be submitted to the Board of Directors for approval and then passed on to the Ministry of Public Enterprises for travel report to support submissions for cabinet's approval. The appointed staff should submit the travel report to the Chief Executive Officer for endorsement and file in the organization travel report file.

7.2 Staff Movements during this Financial Year

7.2.1 Departures

Four staff resigned from SROS in the current financial year. Two of the four staff went to New Zealand and Australia to pursue higher qualifications under the Government of Samoa's scholarship scheme. The other two employees left SROS because of their personal obligations. Manager for Administration and Finance resigned from SROS in December 2017.

7.2.2 Appointments

SROS recruited four new staff in the current financial year to occupy vacant positions. The four recruited staff are all new graduates, and three new staff were in the technical divisions, while one is for the Administration and Finance Division. In January 2018 new manager was appointed for the Administration and Finance Division

8 Outlook for next year

SROS continues to serve Samoa in carrying out scientific researches which can add more value to our local export products. All activities performed by SROS were carefully planned and aspired to provide information and analytical interpretations to assist with on-going works or developments that will contribute to Samoa's economy.

Although SROS has completed research for some of its products and produced business plans, the organization has experienced difficulty in finding partners from the private sector to establish private-public partnerships. As a result, the organization started commercial trials approved by the Board of Directors. The trials aim to establish and strengthen the network between farmers and buyers. It is also a good opportunity for the organization to showcase its products and promote them to potential partners.

SROS foresees an increase in demand for its services and it must be better equipped in all aspects to cater for the anticipated demands. There are many challenges that are preventing SROS from performing at its full potential and limited work space is one of the most important issues. Work and office space must be improved in order to optimize productivity.

8.1 Future risks and uncertainties

One of the inevitable risks is staff turnover. The main reasons identified for rapid staff turnover are better salary and working conditions. This is good for their own personal development, however, it means that SROS will continue to lose people who are highly skilled and trained.

Staff shortage is another major concern given the increase in workload consisting of demands for the services offered by the organization and addition of activities to be performed by the organization such as the trial-commercialization. Although the staff at present are committed and always ready for a challenge, the difficulty eventuates when experienced staff resign and when staff members take time off to study or pursue higher qualification. There is a need for a strategic backup plan to sustain the services by increasing the workforce, establishing a retention plan for highly trained technical staff, offer continuous training to staff and recruiting locum scientists who can perform duties pertaining to scientists on study leave.

8.2 CSO implementation (where applicable)

Not applicable to SROS in this financial year.
Ma le fa'aaloalo lava

Dr. Seuseu Tauati
Chief Executive Officer
Scientific Research Organisation of Samoa

9. Auditor's Opinion

Telephone: 27751
Fax: 24167
Email: info@audit.gov.ws
Website: www.audit.gov.ws

Please address all correspondences to the Controller and Auditor General

P.O Box 13
Apia, Samoa

AUDIT OFFICE

REPORT OF THE AUDIT OFFICE

TO THE GOVERNING BODY IN CHARGE OF GOVERNANCE – SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

Audit Opinion
We have audited the accompanying Financial Statements of the Scientific Research Organisation of Samoa which comprise the Statement of Financial Position as at 30 June 2018, the Statements of Comprehensive Income, Changes in Equity and Cash Flows for the year then ended, a Summary of Significant Accounting Policies and Other Explanatory Notes. The Accounting Firm of BDO, Chartered Accountants, assisted in the audit. The Engagement Partner on the audit resulting in this Independent Auditor's Report is Hanalei Betham.

In our opinion, the financial statements give a true and fair view of the financial position of the Scientific Research Organisation of Samoa as at 30 June 2018, and of its financial performance and its cash flows for the year then ended, in accordance with International Financial Reporting Standards (IFRSs).

Basis for Opinion
We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of Financial Statements* section of our report. We are independent of the Scientific Research Organisation of Samoa in accordance with the ethical requirements that are relevant to our audit of financial statements in Samoa, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

Responsibilities of Those Charged with Governance for the Financial Statements
Directors and Management are responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards, and for such internal control as directors and management determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, directors and management are responsible for assessing the Organisation's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Scientific Research Organisation of Samoa or to cease operations, or have no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Organisation's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements
Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with International Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with these International Standards on Auditing, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a

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AUDIT OFFICE

material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Organisation's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the directors and management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Organisation's ability to continue as a going concern. If we conclude that material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Organisation to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the Directors and Management regarding, among other matters, the significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Report on Other Legal and Regulatory Requirements

In our opinion the financial statements of the Organisation have been prepared in accordance with and complies with the requirements of:

i. Public Bodies (Performances and Accountability) Act 2001, and the
ii. Public Finance Management Act 2001.

We also confirm that:

a. we have been given all information, explanations and assistance necessary for the conduct of the audit; and
b. the Organisation has kept financial records sufficient to enable the financial statements to be prepared and audited.

C.G. Afele

Apia, Samoa
30 October 2018

Fuimaono Mata'afa Papali'i C.G. Afele
CONTROLLER AND AUDITOR GENERAL

11. DIRECTORS REPORT FOR FINANCIAL YEAR 2017-2018

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
DIRECTOR'S REPORT
FOR THE YEAR ENDED 30 JUNE 2018

The Directors present their report together with the financial statements of the Scientific Research Organisation of Samoa for the year ended 30 JUNE 2018 as set out on the accompanying pages and the auditors' report thereon in accordance with the Public Finance Management Act 2001 and the Public Bodies and Accountability Act 2001.

Directors

The directors of the Organisation at any time during the financial year were:

• Sulamanaia Nuuetolu Montini Ott	Chairman	
• Dr. Satupaitea Viali	Director	
• Manuleleua Dr. Sonny Lameta	Director	
• Jewel Monica Adeline Cook	Director	
• Tusani Iosefatu Reti	Director	
• Suluimalo Amataga Penaia	Director	(up to April 2017)
• Ulu Bismarck Crawley	Director	(from April 2017)
• Fonoiava Sealiitu Sesega	Director	(up to 31 December 2016)
• Tilafono David Hunter	Director	(from 1 January 2017)
• Tilafono David Hunter	Ex-Officio/CEO	(up to 31 December 2016)
• Dr. Seuseu Tauati	Ex-Officio/CEO	(from 20 February 2017)

The new Board Directors' appointments were formalised on the 8 June 2017 for a term of three (3) years as per F.K (16)22

Principal Activity

The principal activity of the Scientific Research Organisation of Samoa is to conduct scientific research and develop technologies which outcomes are of great value in the development and sustainability of value added goods and services for export and to achieve reduction on fuel imports and greenhouse gas emissions. There has been no significant change in the principal activity of the Organisation during the year or any of the classes of business that it operates in.

State of Affairs

In the Opinion of the Directors:

(i) the accompanying Statement of Financial Performance, Statement of Changes in Equity and Statement of Cash Flows are drawn up so as to give a true and fair view of the operations and results of the Organisation for the year ended 30 June 2018.

(ii) the accompanying Statement of Financial Position is drawn up so as to give a true and fair view of the state of affairs of the Organisation as at 30 June 2018.

Operating Results

The net loss for the year is $ (152,472) (2017: Net Surplus $ 105,315)

Dated at _____ this _____ day of _____ , 2018.

Signature	***Signature***
Sulamanaia Nu'uetolu Montini Ott	Dr. Satupa'itea Viali
Chairman	**Director**
Apia, Samoa	Apia, Samoa
30/10/2018	29/10/2018

pg 1

12. MANAGEMENT'S REPORT FOR FINANCIAL YEAR 2017-2018

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
MANAGEMENT'S REPORT
FOR THE YEAR ENDED 30 JUNE 2018

MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

The accompanying financial statements are the responsibility of Management. The financial statements have been prepared according to International Financial Reporting Standards and include amounts based on management's best estimates and judgments.

Management has established and maintains accounting and internal control systems that include written policies and procedures. These systems are designed to provide reasonable assurance that our financial records are reliable and form a proper basis for the timely and accurate preparation of financial statements, and that our assets are properly safeguarded.

The Board of Directors oversees Management's responsibilities for financial reporting. The financial statements have been reviewed and approved by the Board of Directors on recommendation from Management.

Our independent auditors (BDO), having been re-appointed by the Government Controller and Chief Auditor, have audited our financial statements. The accompanying auditors' report outlines the scope of their examination and their opinion.

Signature
Dr. Seuseu Tausi
Chief Executive Officer

Apia, Samoa

Dated: 30/10, 2018

Signature
Alailepule Christopher Lei Sam
Manager Administration & Finance

Apia, Samoa

Dated: 30/10, 2018.

pg 2

13. AUDITED FINANCIAL STATEMENTS- FY2017-2018

STATEMENT OF FINANCIAL POSITION

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2018

	Notes	2018 SAT$	2017 SAT$
ACCUMULATED FUNDS			
Opening balance		3,836,786	3,731,471
Add: Surplus		(152,472)	105,315
Closing balance		**3,684,314**	**3,836,786**
Represented by:			
Current assets			
Cash and cash equivalent	3	2,197,811	2,728,372
Trade & Other Receivables	4	206,770	116,539
Prepayments	5	53,094	30,073
Stock on hand	6	143,892	179,770
Total current assets		2,601,567	3,054,754
Current liabilities			
Trade Payables	7	64,014	78,126
Accruals	8	159,093	62,935
Allowance for staff benefits	9	92,919	76,783
Deferred income	11	1,324,208	1,173,289
Total current liabilities		1,640,233	1,391,133
Working capital		961,334	1,663,621
Non Current assets			
Property, plant and equipment	12	2,722,980	2,173,165
Net assets		**3,684,314**	**3,836,786**

The accompanying notes from an integral part of the above financial statement

STATEMENT OF INCOME AND EXPENDITURE

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF INCOME AND EXPENDITURE
FOR THE YEAR ENDED 30 JUNE 2018

	Notes	2018 SAT$	2017 SAT$
INCOME			
Grants from Government of Samoa	10	3,243,944	3,317,148
Technical Services income	14	232,775	133,837
Donor Project income	15	485,165	559,605
Other income	16	97,433	85,416
Total income		**4,059,316**	**4,096,006**
EXPENDITURES			
Audit fees - current		24,795	19,300
Audit fees - FY15/16 under-accrued		3,175	3,174
Depreciation	12	382,259	326,097
Personnel costs	17	2,096,238	1,792,620
Occupancy costs	18	206,571	206,662
Administrative costs	19	593,804	621,454
Directors fees & board expenses	20	81,919	91,889
Donor Project costs	21	404,970	543,983
Other costs	22	418,056	385,513
Total expenditures		**4,211,788**	**3,990,692**
Net Surplus		**(152,472)**	**105,315**

The accompanying notes from an integral part of the above financial statement

STATEMENT OF CHANGES IN EQUITY

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED 30 JUNE 2018

	Accumulated Fund SAT$	Total SAT$
2017		
Balance as at 1 July 2016	3,731,471	3,731,471
Add: Surplus	105,315	105,315
Balance as at 30 June 2017	**3,836,786**	**3,836,786**
2018		
Balance as at 1 July 2017	3,836,786	3,836,786
Add: Surplus	(152,472)	(152,472)
Balance as at 30 JUNE 2018	**3,684,314**	**3,684,314**

The accompanying notes from an integral part of the above financial statement

STATEMENT OF CASH FLOW

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED 30 JUNE 2018

	Notes	2018 SAT$	2017 SAT$
Cash flows from/(to) operating activities			
Cash received from Government of Samoa		3,243,944	3,317,148
Cash Received from Republic of Korea (Fruit Wine)		-	145,877
Cash received from - Secretariat of the Pacific Community		-	3,981
- Coconut oil refinement fund		-	-
- Technical services		232,775	133,837
- Sales Breadfruit Flour - Gluten Free fund		-	1,200
- PHAMA		700	-
- Consultancy services		30,000	27,500
- ACIAR Project Funds		42,680	21,449
- FAO Consultancy		5,285	9,949
- Biomedical Research Fund-US Embassy		-	12,725
- TCM Project Funds		138,360	635,971
- Cocoa Phylogenetics		10,976	320
- Avocado Margarine		-	550
- PHAMA Cocoa Project		15,700	7,500
- Water Supply & Sanitation Funds - Income		17,779	38,682
- Other income		97,433	34,090
Cash paid for expenses		(3,434,118)	(3,772,675)
Net cash flow by operating activities		**401,513**	**618,104**
Cash flows from/(to) investing activities			
Purchase of property, plant and equipment	**12**	(932,074)	(144,443)
Net cash used by investing activities		**(932,074)**	**(144,443)**
Net increase/(decrease) in cash		(530,561)	473,661
Cash and cash equivalent at the beginning		2,728,373	2,254,712
Cash and cash equivalent at the end	**3**	**2,197,812**	**2,728,373**

The accompanying notes from an integral part of the above financial statement

NOTES TO THE FINANCIAL STATEMENTS

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2018

1. GENERAL

The Research and Development Institute of Samoa is an independent corporate body constituted and operating under the provisions of the Research and Development Institute of Samoa (RDIS) Act 2006 and amendments. Its name changed to The Scientific Research Organisation of Samoa (SROS) on 20th November 2008 following amendment of the Act. It is currently located at Nafanua.

The SROS objectives are:

a) to promote the national economy of Samoa based on research and development;
b) to undertake scientific and technical research with the primary aim of adding value to local resources or services;
c) to develop functional prototypes of products and processes based on scientific and technical research for the local or overseas markets;
d) to establish partnership with the private sector and commercial interests to support the Organisation's activities; and
e) ensure effective training for researchers and professionals engaged in scientific and technical research.

2. ACCOUNTING POLICIES

a) Statement of compliance

The statements have been prepared in accordance with International Financial Reporting Standards adopted by the International Accounting Standards Board (IASB), and Interpretations issued by the Standing Interpretations Committee of the IASB.

b) Basis of preparation

The financial statements are prepared on the historical cost basis. They are presented in Samoan Tala.

c) Grants, aids in assistance, donations and capitalisation

The above are treated in the accounts in accordance with their nature and the form in which they are received;

i.) All items which are intended for the support and financing of the Organisation's operations and received in cash are taken to income on receipt.
ii.) All items which are received in the form of depreciable assets, are taken to income in the year of receipt.
iii.) All items that are received in the form of depreciable assets from the Government of Samoa are capitalised.

d) Cash and cash equivalents

Cash and cash equivalents comprises of petty cash, cash at bank and cash held by other Government Ministries for relevant projects form an integral part of the Organisation's cash management are included as a component of cash and cash equivalents for the purpose of the statement of cash flows.

e) Functional and presentation currency

The financial statements are presented in Samoan Tala (SAT$), which is the Organisation's functional currency and all values presented in Samoan Tala have not been rounded.

f) Property, plant and equipment

Items of property, plant and equipment are measured at cost less accumulated depreciation and any accumulated impairment losses.

Depreciation is charged so as to allocate the cost of assets less their residual values over their estimated useful lives, using the straight-line method.

The following rates are used for the depreciation of property, plant and equipment:-

Buildings and improvements	5%
Roads	20%
Motor vehicles	20%
Laboratory equipment	20%
Furniture & fittings	20%
Office and other equipment	20%

g) Foreign currency translation

Transactions in foreign currency are translated to Tala at the foreign exchange rates ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies at balance date are translated to Tala at exchange rates ruling at that date. Foreign exchange differences arising on translation are recognised in the statement of income and expenditure.

2. ACCOUNTING POLICIES (Cont'd)

h) Deferred Income

Deferred Income represent grants that has been received by SROS from its Donor Partners in relation to Research and Product Development under the different Divisions within SROS (mostly via Project Proposals), which include the Food Science & Technology Division, Plant & Postharvest Technologies Division, Environment & Renewable Energy and Technical Services Division, which are supported by the Administration and Finance.

i) Income tax

The Scientific Research Organisation of Samoa is not subject to taxation.

j) Stock on hand

Stock on hand are stated at the lower of cost and net realisable value.

k) Leases

Leases are classified as finance leases whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee. All other leases are classified as operating leases. Rentals payable under operating leases are charged to statement of income and expenditure on a straight-line basis over the term of the relevant lease.

l) Provisions

A provision is recognized in the statement of financial position when the Organisation has a present legal or constructive obligation as a result of past event, and it is probable that an outflow of economic benefits will be required to settle the obligation.

m) Employee Benefits

i.) Salaries and wages, annual leave and long service leave

Liabilities for employees' entitlements to salaries and wages, annual leave, long service leave and other current employee entitlements (that are expected to be paid within twelve months) are accrued at undiscounted amounts, and calculated at amounts expected to be paid as at reporting date.

Liabilities for other employee entitlements, which are not expected to be paid or settled within twelve months of reporting date, are accrued in respect of all employees at the present value of future amounts expected to be paid. A provision of one-third of sick leave balance as at year end is taken into account as a liability.

ii.) Superannuation contributions

The organisation contributes towards the National Provident Fund, a defined contribution plan in accordance with local legislation and to which it has no commitment beyond the payment of contribution. Obligations for contributions to the defined contribution plan are recognised immediately in the statement of income and expenditure.

3. CASH AND CASH EQUIVALENT

		2018 SAT$	2017 SAT$
Petty cash		500	500
Cash at ANZ Bank (Samoa) Limited - main account		547,759	1,028,403
Cash at Westpac Bank Ltd - Technical Services		672,464	491,429
ANZ Bank (Samoa) Limited: project account	- SPC / PARDI Funds	-	121,217
	- Coconut Oil Refinement Fund	270,769	270,769
	- Avocado Margarine Fund	193,136	193,136
	- PHAMA Cocoa	-	-
	- TCM EIF Tier II Project Fund	339,436	398,278
	- Water Supply & Sanitation Fund - MNRE	5,056	24,138
	- Photosynthetic Bacteria Research Funds	4,961	4,961
	- Others	163,730	195,541
		2,197,811	**2,728,372**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2018

	2018 SAT$	2017 SAT$
4. TRADE & OTHER RECEIVABLES		
Trade receivables	136,716	44,708
Other receivables	88,939	90,715
Less: Provision for doubtful debt	(18,884)	(18,884)
	206,770	**116,539**
5. PREPAYMENTS		
Prepaid Insurance	53,094	30,073
	53,094	**30,073**
6. STOCK ON HAND		
Lab consumables on hand	143,892	179,770
	143,892	**179,770**
7. TRADE PAYABLES		
Trade Payables	64,014	78,126
	64,014	**78,126**
8. ACCRUALS		
Accrued expenses	117,213	43,560
Audit fees	24,495	19,300
Electricity	17,280	-
Land lease	105	75
	159,093	**62,935**
9. ALLOWANCE FOR STAFF BENEFITS		
Staff annual leave entitlements	92,919	76,783
Total allowance for staff benefits	**92,919**	**76,783**
Movement for Allowance of Staff Benefits		
Balance at beginning of the year	76,783	58,950
Additional allowance during the year	17,616	20,504
Utilised during the year	(1,480)	(2,671)
Balance at year end	**92,919**	**76,783**
10. GRANTS FROM GOVERNMENT OF SAMOA		
Cash received from Ministry of Finance	**3,243,944**	**3,317,148**

11. DEFERRED INCOME

Donors	Opening Balance (2017)	Additional Funding	Costs Incurred	Ending Balance (2018)
SPC / PARDI Fund	121,217	-	-	121,217
Coconut Oil Refinement Fund	270,769	-	-	270,769
Avocado Margarine Fund	193,633	-	-	193,633
PHAMA - Frozen Taro Project Fund	5,963	-	700	5,263
PHAMA - Cocoa Fermentation Project Fund	3,214	-	-	3,214
FAO Consultancy Fund	62,241	5,498	4,292	63,447
TCM EIF Tier II Project Fund	398,279	275,085	138,350	535,014
Photosynthetic Bacteria Research Fund	4,961	-	-	4,961
Water Supply & Sanitation Fund - MNRE	24,318	-	6,539	17,779
PHAMA Cocoa	6,568	24,592	15,478	15,682
Cocoa Phylogenetics	11,823	-	10,557	1,266
FAO LOA	-	76,868	57,023	19,845
FAO Youth	-	31,802	12,789	19,013
ACIAR Project 2017/044	-	12,344	5,438	6,906
SIDS Donated Assets	70,303	-	24,104	46,199
Total Deferred Income	**1,173,289**	**426,188**	**275,270**	**1,324,208**

12. PROPERTY, PLANT & EQUIPMENT

Cost	Buildings & Roads SAT$	Furniture & Fittings SAT$	Laboratory Equipment SAT$	Office Equipment SAT$	Motor vehicles SAT$	TOTAL SAT$
1 July 2017	2,511,871	307,688	3,781,109	1,526,110	487,483	8,614,261
Additions	368,345	4,490	342,240	102,000	115,000	932,074
Disposals	-	-	-	-	-	-
At 30 June 2018	2,880,216	312,178	4,123,349	1,628,110	602,483	9,546,335
Accumulated depreciation						
1 July 2017	936,499	258,633	3,528,836	1,379,312	337,816	6,441,096
Depreciation	139,517	18,445	127,754	53,709	42,834	382,259
Disposals	-	-	-	-	-	-
At 30 June 2018	1,076,016	277,078	3,656,590	1,433,021	380,650	6,823,355
Carrying amount						
30 June 2017	**1,575,372**	**49,055**	**252,273**	**146,798**	**149,667**	**2,173,165**
30 June 2018	**1,804,200**	**35,100**	**466,759**	**195,089**	**221,833**	**2,722,980**

13. AMORTISATION SCHEDULE

The Amortisation Schedule relates to the donated Assets for SROS Activities from the Government of Samoa after the hosting of the SIDS meeting in September 2014. These Assets are amortised to income over 5 years for Office Equipments which are the same rates at which the Assets are depreciated.

	2018 SAT$	2017 SAT$
Costs of Donated Assets		
SIDS Assets funded by the Government of Samoa	120,520	120,520
Total cost of assets	120,520	120,520
Accumulated Amortisation		
Opening accumulated amortisation	50,217	26,113
Amortisation for current year	24,104	24,104
Closing accumulated amortisation	74,321	50,217
Unamortised Amount	**46,198**	**70,302**
Current portion of amortisation	24,104	24,104
Non - current portion of amortisation	22,094	46,198
Unamortised amount	**46,198**	**70,302**

14. TECHNICAL SERVICES INCOME

Technical Services	232,775	133,837
	232,775	**133,837**

15. DONOR PROJECT INCOME

Secretariat of the Pacific Community / PARDI fund	-	3,981
Avocado margarine fund	-	550
PHAMA Frozen Taro Project fund	700	-
PHAMA Cocoa Fermentation Project fund	-	-
PHAMA Cocoa Project	15,700	932
FAO Consultancy fund	5,285	9,949
FAO LOA	57,500	-
TCM EIF Tier II Project fund	138,360	309,548
Photosynthetic Bacteria Research fund	-	3,039
ACIAR Project Fund - 2014/077	42,680	21,859
ACIAR Project Fund - 2017/014	5,450	-
Republic of Korea funds - Fruit Wine fund	187,013	145,877
MNRE - Water Supply & Sanitation Project	6,539	38,682
IUCN Biodiesel fund	-	10,943
Sales Breadfruit Flour - Gluten Free fund	-	1,200
Biomedical Research Funds - US Embassy	-	12,725
Cocoa Phylogenetics Project	10,976	320
FAO Youth Income	14,961	-
	485,165	**559,605**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2018

	2018 SAT$	2017 SAT$
16. OTHER INCOME		
Amortisation Income	24,104	24,104
Consultancy fees	30,000	27,500
Other income	43,329	33,812
	97,433	**85,416**
17. PERSONNEL COSTS		
Salaries and wages	1,872,950	1,647,393
NPF employer contributions	183,029	118,029
ACC Employer Levies	19,992	15,694
Higher Duty Allowances	20,268	11,504
	2,096,238	**1,792,620**
18. OCCUPANCY COSTS		
Electricity	206,556	206,647
Land lease	15	15
	206,571	**206,662**
19. ADMINISTRATIVE COSTS		
Advertising and promotions	16,323	54,961
Bank charges	1,902	1,833
Internet charges	42,069	38,278
Fees, License and registrations	5,527	9,914
Rental / hire	60,228	20,445
Fuel and oil	22,121	15,777
Printing and stationery	72,928	56,272
Repairs and maintenance - motor vehicles	21,545	19,393
Repairs and maintenance - building	46,022	25,165
Repairs and maintenance - office equipment	4,623	2,810
Repairs and maintenance - plant & equipments	16,476	2,443
Repairs and maintenance - furniture and fittings	2,505	1,976
Subscriptions	9,709	4,875
Telephone, fax and postages	25,581	20,410
Travel and accommodation	16,902	65,729
DSA / Transit / Permit Visa & Incidental Allowances	28,101	89,291
Water supplies	8,878	5,054
Insurance	82,150	86,155
Local travel	19,473	5,251
Consultancy fees	770	2,250
General expenses	89,971	74,289
Provision for doubtful debt	-	18,884
	593,804	**621,454**
20. Directors Fees & Board Expenses		
i. Board expenses	2,898	3,613
Balance represents board expenses for meetings held throughout the year.		
ii. Directors' fees	79,021	88,276
	81,919	**91,889**

The above amount consist of sitting allowance & annual Directors fees paid to eligible Directors who include; Sulamanaia Nuuetolu Montini Ott., Asiata Dr. Satupaitea Viali, Dr. Sonny Manuleleua Lameta, Tusani Iosefatu Reti, Jewel Monica Adeline Cook and Other Directors, who are public servants, were not paid sitting allowance & annual Directors fees.

21. DONOR PROJECT COSTS		
Secretariat of the Pacific Community / PARDI costs	-	-
Coconut Oil Refinement costs	-	-
Avocado Margarine costs	-	550
PHAMA Cocoa Fermentation Project costs	-	-

21. DONOR PROJECT COSTS (Cont'd)	2018 SAT$	2017 SAT$
PHAMA Cocoa Project	15,700	932
FAO Consultancy costs	5,285	9,949
FAO LOA	57,500	-
TCM EIF Tier II Project costs	138,360	309,548
Photosynthetic Bacteria Research costs	-	3,039
ACIAR Project 2014/077	42,680	21,859
ACIAR Project 2017/014	5,450	-
Fruit Wine Project costs	106,819	142,377
Water Supply & Sanitation Funds - MNRE costs	6,539	30,541
IUCN - Biodiesel Project costs	-	10,943
Breadfruit Flour costs	-	1,200
Biomedical Research Funds - US Embassy	-	12,725
Cocoa Phylogenetics	10,976	320
FAO Youth project costs	14,961	-
Phama Frozen Taro Project	700	-
	404,970	**543,983**

22. OTHER COSTS		
Avocado Fruits Collection	-	7,691
Avocado Oil	-	600
Lab consumables	178,079	91,919
Freight and handling costs	57,775	22,724
Accreditation costs	51,290	63,177
Plant hire expenses	1,032	3,407
Interviewing panel allowances	648	750
Gas expenses	33,969	45,967
Clothing allowance costs	1,200	7,400
Cleaning expenses	13,781	19,563
Staff training costs	4,690	32,104
Telephone allowances costs		3,350
Professional services expenses	24,980	9,955
Awareness expenses	24,015	56,512
Other internal project costs	12,927	8,015
Office catering costs	13,670	12,380
	418,056	**385,513**

23. RELATED PARTY DISCLOSURES		
i. Salaries and short-term employee benefits	704,567	641,289

Balance represents remuneration of key member of management during the year.

24. PROJECT GRANTS

a) The following projects are currently carried out by SROS as the Implementing agency, in which the actual funds are held by Government via the Ministry of Finance (MOF). Per confirmation from MOF, the following balances represent the unused funds at balance date.

Project Description	Balance as at 30/06/2017	Funds received	Funds expended	Balance as at 30/06/2018
Turkey Grant (Ethanol Project)	51,828	-	1,626	50,202
IUCN Biodiesel Project Funds - MNRE	23,283	-	-	23,283
Turkey Grant (Breadfruit Project)	5,567	-	-	5,567
Republic of Korea - Fruit Wine Project	224,783	-	155,096	69,687
Japanese Embassy - Sustainable Growth of Fragrant Plants for Poverty Reduction Project	27,361	-	1,207	26,154
ACIAR funded Regional Fruit Tree Project	25,876	-	25,045	831
Total Project Grants held at MOF	**358,698**	**-**	**182,974**	**175,724**

i. Turkey Grant (Ethanol Project): Purpose: To develop and optimize a process to produce bioethanol from the identified starchy feedstock by maximizing sugar production from flour.
ii. IUCN Biodiesel Project Funds - MNRE: Purpose: To determine the optimum conditions and characteristics of the alkali process for biodiesel production using *Jatropha* oil as a feedstock.
iii. Turkey Grant (Breadfruit Project): Purpose: To identify breadfruit pathogens, especially virulent strains, present during pre- and post-harvest of breadfruits, and determine phylogenetic relation between the isolated pathogen strains.
iv. Republic of Korea - Fruit Wine Project: Purpose: To produce wine-like beverages from various ripen fruits that are grown, available and abundant in Samoa, for domestic and export markets.

24. PROJECT GRANTS (Cont'd)

v. Japanese Embassy - Sustainable Growth of Fragrant Plants for Poverty Reduction Project: Purpose: To promote orchids and fragrant oils as another means for income generation and job creation in the rural communities.

vi. ACIAR funded Regional Fruit Tree Project: Purpose: To increase the efficiency of breadfruit and pineapple value chains through improved productivity and postharvest handling practices, and to enhance private sector and Government research and extension capacities in support of fruit industry development.

vii. PHAMA Cocoa Project: Purpose: To determine the best drying conditions for fermented cocoa beans using a new design of solar dryer, for the ultimate aim of producing high quality fermented cocoa beans for export and for a high quality chocolate product.

viii. Cocoa Phylogenetics Project: Purpose: To improve science-based decisions on which cocoa varieties to propagate, this project aims to collate genetic information (Trinitario, Forastero, Criollo) of Samoan cocoa plants to their morphological features (high yielding, disease tolerance, etc.) as well as their chocolate aroma profiles for an improved product for export.

ix. New Project received in July 2017, within this Financial Year 2017/2018:
ACIAR HORT 2017/014 Taro Project: Purpose: Australia had identified the possibility of Phytophthora colocasiae (Pc, causative agent of Taro Leaf Blight TLB) entering Australia inside or on fresh Samoan taro corms, and subsequently prevented Samoan from exporting fresh taro into Australia. This project was therefore instigated to investigate where there is a real chance of Pc making it into Australia via fresh Samoan taro corms.

x. FAO LOA (Breadfruit) Project: Purpose: To utilize funds that were left over from the Samoan breadfruit Summit, the SROS put forth two proposals (i) to increase the capacity of Samoan breadfruit farmers through trainings to educate them on the export pathway for fresh breadfruit into New Zealand; and (ii) to increase the capacity of Samoan women's committee to market value-added breadfruit products for better nutrition and to utilize our access breadfruit produce. These two proposals were combined into one LOA and all activities that were agreed upon for this project have been achieved.

xi. FAO Youth Project: Purpose: T train youth and young farmers necessary practical knowledge and technical capacity of food processing to produce value added processed food products for domestic markets.

b) Equipments procured under Sustainable Growth of Fragrant Plants for Poverty Reduction Project:
The total funds expended under this project held with MOF to the amount of SAT211,721 comprises of research equipments related for this project. i) SAT$202,209 (USD$77,021.25 equivalent) for lab equipments procured in December 2015, ii) SAT$9,460 (USD$5,373.00 equivalent) for lab equipment procured in May 2017, iii) SAT$52 for bank related fees. These equipments are planned to be utilised in the Financial Year 2016/2017 at the project beginning of the project, and some of these equipments will be transferred to the Private Sector for Commercialisation purposes.

25. CAPITAL COMMITMENTS

The Ministry of Finance has approved a budget of SAT$3.28 million (2017: SAT$3.31 million) for the period ended 30 June 2018. There were no Capital Budget for this financial year 2017/2018.

26. CONTINGENT LIABILITIES

The directors are not aware of any contingent liabilities for the period ended 30 June 2018. (2017: SAT$NIL).

27. EVENTS OCURRING AFTER BALANCE SHEET DATE

There are no events subsequent to balance date which require recognition or disclosure in this financial statement. (2018: SAT$NIL).

28. APPROVAL OF FINANCIAL STATEMENTS

The board of directors approved the financial statements of the Organisation on ..... / ..... / .....

14 Annex (Analysis of Financial Performance Measures)

Table of Key Performance Measures

Performance Measures	This Year Actual 2017-2018	Last Year Actual 2016-2017	Budget Next Year 2018-2019	Comments
Government Grant.	3,243,944	3,317,148	3,743,944	We note a slight decrease in government grant for this year compared to the previous year FY2016/2017. FY18-19 budget proposal will be increased by $500,000 for capital equipment.
Technical services income	232,775	133,837	250,000	Technical services generated more than 57% compared to the last FY2016-2017. The increase was due to the growing numbers of samples received for testing. Therefore, we forecasted the 250,000 tala revenue generated from the technical services in the next FY2018-2019.
Other Income	582,598	645,021	590,000	Other income consists of sales of goods, consultancy services fees, and project income. The total of $74,440 decrease from the last FY2016-2017.
Total Revenue	**4,059,317**	**$4,096,006**	**$4,583,944**	
Expenditure (Personnel, operating & depreciation)	4,211,788	3,990,692	4,200,000	The expenditure utilization for this financial year is 94% higher than the previous year mainly due to the increase in administrative costs and Donor Project costs.
Total expenditures	4,211,788	3,990,692	4,200,000	
Surplus / (Deficit)	(152,475)	105,315	(100,000)	The (152,472) deficit in this FY2017/2018. Increase in personnel costs, and repairs and maintenance of Buildings. Next FY2018-2019 forecasted to minimize the surplus to (100,000) tala.
Current Assets	2,601,567	3,054,754	2,600,000	The decrease in Current Assets was mainly from the increase of spending, and utilization of project funds at the allocated activities.
Non-Current Assets	2,722,980	2,173,165	500,000	It was 549,815 tala increase from the FY2016-2017. This was due to new hilux vehicle, new building, and laboratories machines.
Total Assets	**5,324,548**	**5,227,919**	**$3,100,000**	

Current Liabilities	1,640,233	1,391,133	1,400,000	The increase in Current Liabilities is mainly from the increase in deferred income funds.