Scientific Research Organisation of Samoa

Annual Report

2014 - 2015

Government of Samoa

OFFICE OF THE MINISTER

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

20th May 2016

Honourable 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 Annual Report of the Scientific Research Organisation of Samoa (SROS) for the year ended 30th June 2015.

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 La'aulialemalietoa Asiata Leuatea P.F. Schmidt
MINISTER
SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

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1. Statement to Parliament

1.1 Introduction

This is the ninth Annual Report for the Scientific Research Organisation of Samoa (SROS) since its inception in 2006. Previously known as the Research Development Institute of Samoa (RDIS), SROS is a public beneficiary body constituted and operating under the provisions of the Research and Development Institute of Samoa Act 2006, the Scientific Research Organisation of Samoa Act 2008, the Labour and Employment Relations Act 2013, the Public Finance Management Act 2001 and the Public Bodies (Performance and Accountability) Act 2001. SROS also adheres to specific reporting requirements to Government as laid out by the Ministry of Finance.

This Annual Report covers the Financial Year (FY) July 2014 – June 2015 in which its operational activities were financed under an approved budget of $3,405,735 comprising of $3,266,702 grant from Government and $139,033 expected to be collected by the Organization largely from its technical and consultancy services. The accounts for this financial year have been audited by the Samoa Audit Office, so as to be in line with the requirements of the Public Finance Management Act 2001.

1.2 SROS Vision & 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; and,

e) to ensure effective training for researchers and professionals engaged in scientific and technical research work.

Additionally, SROS also performs various functions:

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 or any other national plan of Samoa;
    ii) assisting industries, Government Ministries, corporations and agencies;
    iii) furthering the interests of the community; and,
    iv) any other purpose determined by the Board
b) to encourage or facilitate the application or utilization of the results of any other scientific research;
c) to act as a means of liaison between Samoa and other countries in matters connected with scientific research and development;
d) to train and to assist in the training of research 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 and studentships for 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; and,
g) to publish scientific and technical reports, periodicals and papers.

In performing the above functions, the Organisation shall take into account relevant Government policy as communicated to the Organisation by the Minister or the CEO.

The Organisation shall also:

i treat the functions referred to in a) and b) above as its primary functions; and,
ii treat the other functions referred to in c) to g) as its secondary functions.

2. Chairperson's Report

On behalf of the Minister responsible for SROS, the SROS Board of Directors, Management and Staff, I wish to present SROS's ninth Annual Report for the financial year July 2014 – June 2015. The Output 1 under the authority of the Chief Executive Officer is responsible for providing advice to the Minister responsible for SROS and the Board of Directors, relating to the SROS's mandated objectives and desired outcomes over the longer term. Under the guidance of the Board of Directors, Output 1 is also responsible for the implementation of approved recommendations associated with the development of new or the review of existing strategic policies relating to scientific research and development.

2.1 Activities and Performance of the Entity

SROS continues to progress with scientific research developments that will have widespread economic benefits for the Samoan community, and build on its momentum to position itself to be an internationally recognized research organization. Much has happened during this financial year in terms of research progressions and technical developments, and they are highlighted in the Chief Executive Officer's report that follows.

In terms of financial performance, SROS for the first time has surpassed its Cost Recoveries target of $139,033 by $72,167 or 52%, which is a 58% improvement compared to collections of $133,349 from the previous financial year. In two consecutive financial years, SROS has managed to generate a surplus of $170,236 for this financial year which is nearly a four-fold increase compared to the previous financial year's surplus of $45,233.

2.2 Capital and Dividend Information

The major capital investment made by SROS in this financial year is the road resealing work on the deteriorating road in the SROS compound, the purchase of a new 15-seater van to assist with the increased transport demand and activities, and the installation of flex windows for the IANZ accredited Chemistry and Analytical laboratories.

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

2.3 Director Information

As stipulated in the amended SROS Act 2008, the Board of Directors for SROS consists of seven Directors and the CEO of SROS who is an ex-officio member, with the Chairman appointed by the Head of State from the seven Directors on the recommendation of Cabinet. In view of the three year term of directorship, this is the last financial year for the current Board of Directors who are as listed (photo 1):

- Fonoti Perelini Perelini — Chairman
- Dr. Satupa'itea Viali — Director
- Dr. Taema Imo-Seuoti — Director
- Dr. Sonny Lameta — Director
- Sulamanaia Montini Ott — Director

- Lalauena Palagi Taulealo — Director
- Suluimalo Amataga Penaia — Director
- Tilafono David Hunter — Ex-Officio/CEO

During this financial year, the Board of Directors performed various functions to ensure proper and efficient performance of SROS, determine policy and provide directions to the CEO relating to the overall operations of SROS. Key decisions made and approved by the Board of Directors include the following:

- review and endorsement of research and technical project proposals;
- review and approval of SROS quarterly and annual report submissions including audited financial statements to MOF and Cabinet, and research project completion reports;
- approval of key development activities such as the road resealing work, new 15-seater van and staff official travel; and,
- providing expert advice to the CEO and Management with respect to the smooth progress of SROS's mandated functions and activities.

The Board of Directors held a total of eight monthly meetings and the majority of Directors attended all, except three Directors who missed two meetings each and conveyed their apologies due to work related obligations and commitments. Although the Board of Directors held only eight monthly meetings during this financial year, they still provided approval considerations via email communications with the CEO, for other pressing matters that could not wait for the following Board meetings. These include staff official travel overseas for work related meetings, workshops and training.

The sitting allowances to the value of $11,688 and Directors' fees to the value of $22,100 were paid to the four eligible Directors (Dr. Satupa'itea Viali, Dr. Sonny Lameta, Sulamanaia Montini Ott and Lalauena Palagi Taulealo), while the other three Directors who are public servants weren't remunerated. A total of $6,668 was expended to support the functions and activities of the Board of Directors throughout the financial year.

Photo 1: SROS Board of Directors for financial year 2014/2015 [Sitting (L to R) Dr. Taema Imo, Fonoti Perelini Perelini, Lalauena Palagi Taulealo; Standing (L to R) Tilafono David Hunter, Suluimalo Amataga Penaia (insert), Dr. Sonny Lameta, Dr. Satupa'itea Viali, Sulamanaia Montini Ott].

2.4 CSO Obligations

The SROS did not implement any CSO obligations during this financial year.

2.5 Other Information

All other relevant information are highlighted in the CEO's report that follows.

In closing, I would like to specially acknowledge with much gratitude the former Minister responsible for SROS, Honourable Fa'amoetauloa Lealaiauloto Taito Nanai Dr. Fa'ale Tumaali'i, for his regular wise counsels rendered to the Board to ensure proper management of SROS to achieve its desired research and technical outcomes.

I would also like to extend my appreciation to the Government of Samoa and our Development Partners for their financial support via on-going investments in SROS. The Management and staff of SROS have been highly dependable in terms of commitment throughout this financial year and making positive progress to our research and development efforts towards achieving desired outcomes for the betterment of our national economy. To my fellow Board colleagues, thank you very much for your unrelenting support in assisting our CEO and Management with the running of our Organisation to realize its innovative research and development initiatives for the betterment of our people.

Soifua

3. Chief Executive Officer's Report

This annual report covers the financial year July 2014 – June 2015. Our Government's continued commitment to realize SROS's mission was evident in the approval of the requested budget of approximately $3.406 million tala, which was about 5% less than that received in the previous financial year. This approved budget is composed of $3.267 million tala as Government Grant and $0.139 million tala as Cost Recoveries, to support and enable SROS to undertake scientific research and product development activities for value adding to goods and services. There has been considerable progress made in the areas of prototype product development, strengthened technical service capabilities and collaborative partnerships as detailed in the sections to follow.

The staff strength of SROS during this financial year is 45 (24 men and 21 women; photo 2) and the Management team is as follow:

- Tilafono David Hunter — Chief Executive Officer
- Tuimaseve Kuinimeri Asora-Finau — Manager, Plant & Food Technology Division
- Gaufa Salesa-Fetu — Manager, Industrial Research Division (up to 12th June 2015)
- Mamea Samuel Ieremia — Manager, Administration & Finance Division
- Pousui Dr. Fiame Leo — Manager, Technical Services Division
- Lilo Samani Tupufia — Manager, Environment & Renewable Energy Division
- Fauono Sina Mualia — Business Development Specialist

In addition to the abovementioned Management team, SROS has two overseas volunteers assisting with its research, technical and commercial development activities as follow:

- Dr. Kenneth Wong (up to end of October 2014) – Senior VSA Volunteer assigned to SROS to assist with the establishment of mutually beneficial partnership links with the private sector and commercial interests to support SROS activities and mandate through research and development.
- Dr. Kenji Sakamoto (February 2014 – current) – Senior JICA Volunteer assigned to SROS to assist with research related to functional ingredients from many natural resources, including medicinal plants for health care applications, and orchid and fragrant plants for cosmetic applications.

Photo 2: SROS Management & Staff for the financial year 2014/2015.

3.1 Highlights for the year

Highlights noted for this financial year include the following activities.

(i) In September 2014, SROS promoted its various prototypes from ongoing technological and product development activities at the UNSIDS Conference held in Samoa which included biodiesel from copra and *Jatropha* seed oils, gluten free breadfruit flour, vanilla extract, avocado soap and assorted fruit spirits. SROS also supplied about 800 kg of the gluten free breadfruit flour to: (1) WIBDI and C1 Espresso (based in Christchurch, New Zealand) to make cookies and pastries for their kiosk at the Conference venue, and for their preparation of light refreshments for the SPC Pacific Organic and Ethical Trade Community (POETCom) coordinated side event on Organic Agriculture; (2) a few local food vendors at the Teuila Festival to promote gluten free food ingredients, and; (3) Vailima Breweries Ltd to brew their bottled Vailima Natural beer which was launched during the conference.

(ii) A consultancy contract to the value of USD$17,000 was signed with FAO in November 2014, to undertake postharvest loss and food safety risk analysis for selected fruit and vegetable chains. This is in support of the FAO Technical Cooperation Programme (TCP) which is executed by MAF and SBS for the project on *'Improving the capacity for evidence-based policy monitoring and development'.* The consultancy had a six months' timeframe and it started in February 2015. Consultancy work is one of SROS's revenue generation activities to achieve its annual cost recovery targets to support its operations.

(iii) In December 2014, the IANZ approved the inclusion of new microbiology and chemistry test methods in the scope of accredited tests for the SROS accredited laboratories. The microbiology test method included is the *Vibrio* presence in undercooked seafood, and the chemistry test methods included analysis of histamine and mercury in fish, shellfish and fish products, and energy. The new accredited test methods will extend SROS' technical capacity to respond to the needs of its clients in both public and private sectors.

(iv) SROS's ongoing efforts in partnership with Vailima Breweries Ltd with the brewing and sale of their popular Vailima Natural beer, to induce local manufacturers to commercialize breadfruit flour production finally materialized in December 2014 with a local manufacturer, Natural Foods International, formalising a supply contract with Vailima Breweries Ltd and has taken over from SROS to supply the flour for the continuous brewing of Vailima Natural beer. This is a milestone for SROS as it has realized two of its key objectives, namely: to undertake scientific and technical

research with the primary aim of adding value to local resources and services, and; to establish partnership with the private sector and commercial interests to support the Organisation's activities.

(v) In February 2015, the Embassy of Japan (Samoa Office) and SROS signed a Grant Contract to the value of USD$94,912 to fund the latter's project titled, "Sustainable Growth of Fragrant plants for Poverty Reduction", to develop and commercially apply economically viable plant resources for the well-being of the Samoan people at the grassroots level. This project realized one of SROS's functions namely to carry out scientific research and develop technologies to further the interests of the communities.

(vi) In March 2015, the SROS Narcotics Laboratory services were extended to hard drugs. Funded by the New Zealand Government, two SROS scientists were trained at the Institute of Environmental Science and Research (ESR), to qualify as authorised analysts for methamphetamine (or ice) and its precursors. In connection with this, SROS will formalize a revised service contract with MOP in July 2015 to test controlled substances including methamphetamine (or ice) and cocaine to name a couple, for court cases related to narcotics crimes under the Narcotics Act 1967.

(vii) In March 2015, SROS promoted its two investment profiles – gluten free breadfruit flour and avocado oil – at the SAME "Buy Samoa Made Products" Trade Show held in Sydney, Australia, to entice potentially interested investors to realise their commercial potentials. Great interest was shown for the two prototypes by a few wholesale distribution companies as well as a few Australian based retailer stores that sold products imported from the Pacific Islands. A potential investor, Yazaki Samoa Ltd, also showed interest in the gluten-free breadfruit flour, and informal negotiations are in progress. SROS also assisted two local exporters – Samoa Agromarketing and Farmer Joe – with sensory evaluation of their frozen taro products of the varieties Samoa 1 and Samoa 2 at the Trade Show. The two exporters saw firsthand the great feedback and demand for Samoa's frozen taro and have established contacts with interested distributors to receive and sell their frozen taro products in Australia. This marked a successful short term outcome for the PHAMA-funded project on frozen taro that SROS implemented, as Samoa's taro can now re-enter the Australian market with a product that targets customers' preference and willingness to buy. This also realized one of SROS's functions, namely to carry out scientific research and develop technologies to assist industries, and one of our objectives, namely establish partnership with the private sector and commercial interests to support SROS's activities.

(viii) Research to screen promising taro lines from cycle 8 (via sensory and nutritional evaluations) (PARDI) and evaluate frozen supply chain for taro to export markets (PHAMA) were completed in May 2015, and reports on project findings and recommendations were disseminated to interested stakeholders locally and abroad.

(ix) SROS collaborated with MCIL with the preparation of relevant documentations for patent application to patent six plant and marine species identified for remedy of diabetes in consultation with MCIL to protect these species under international patent law. This collaboration is work in progress.

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.

(i) Environment & Renewable Energy Division (ERED)

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

The following sections highlight work in progress of ERED during this financial year.

a) Jatropha as an Alternative Source of Biodiesel

Funded to the value of USD$150,000 received from IUCN in financial year 2012/2013, extraction trials are continuing using *Jatropha* seeds harvested from the *Jatropha* plot established at STEC Mulifanua Coconut Plantation, to assess and compare extraction efficiency and effectiveness of the Kent Kraft 40 kg per hour (KK40) oil expeller (photo 3) with the copra oil expellers, as the latter were found to be ineffective in extracting oil from the seeds. It was observed that the KK40 oil expeller extracted more oil from the seeds compared with the copra oil expellers. Further trials are being conducted to determine the actual *Jatropha* oil yield, retention time of extraction and maximum capacity the KK40 oil expeller can handle. Laboratory extraction of *Jatropha* oil is also being conducted using both solvents and mechanical means. Solvent extraction produced an average of up to 50% v/w of oil compared to mechanical extraction using KK40 which produced up to 40% v/w of oil from the dry seeds. Mechanical extraction has not being completed to confirm the actual oil yield due to mechanical problems with the KK40 expeller.

Photo 3: Kent Kraft 40 kg/hour (KK40) oil expeller.

Also, laboratory trials for bioconversion are ongoing to find an appropriate pathway to produce biodiesel using *Jatropha* oil. The current methods being trialed are acid esterification, enzymatic reaction methodology and alkali trans-esterification. Initial results from bioconversion of *Jatropha* oil to biodiesel indicated that very high FFA content in *Jatropha* oil impacted the reaction when using an alkali catalyst (NaOH). Reaction resulted in a reversed reaction due to saponification giving a very low free ester yield. Using Cella Trans Lipase donated by Novozyme which was specifically engineered to withstand methanol inhibition, gave a good separation at a much longer period of time; more than 24 hours.

b) Biodiesel Project

Biodiesel production using the 200-L pilot plant is ongoing for promotional activities of fueling selected vehicles in partnership with SPREP, MNRE and STEC. A problem with poor quality oil recently supplied by STEC was solved by employing a two-step reaction for biodiesel production, which involved converting the loose FFA to esters by using an acid followed by adding an alkali to neutralize the acid residue left in the reaction medium and convert the left over triglycerides to esters. Up to 2500 liters of biodiesel was produced for promotion at the UNSIDS Conference using this two-step method. The quality control testing of the resultant biodiesel showed an ester content of 98%, moisture of 200 ppm and most importantly a sulphur content of less than 50 ppm. All parameters tested meet the international standards required for the biodiesel product. Methanol, sodium hydroxide and spare parts for the biodiesel pilot plant were procured from Asia Biofuel Company using the IUCN project funds.

SROS in partnership with MNRE, STEC and MOF submitted a concept approved by NECC to EU-GIZ to acquire the necessary resources to the value of €650,000 to either (a) produce up to 600,000 L of biodiesel annually for a B5 blend (95% diesel: 5% biodiesel) for the transport sector, or (b) deploy a biomass gasification system of appropriate capacity at STEC to generate electricity from various invasive trees as feedstocks, for direct feed to the grid; whichever of the two is more commercially viable.

Manager of ERED is a co-author of a publication using findings from SROS biodiesel project; publication details as follows:

Woo, C., Kook, S., Rogers, P., Marquis, C. Tupufia, S. C. 2015. "A Comparative Analysis on Engine Performance of a Conventional Diesel Fuel and 10% Biodiesel Blends Produced from Coconut Oils" SAE Int. J. Fuels Lubr. 8(3):2015, doi:10.4271/2015-24-2489.

c) Fruit Wine Project

Funded to the value of USD$140,000 received from South Korean Government in the financial year 2013/2014, various locally available and abundant fruits were evaluated as feedstocks for fruit spirit production. Initially, all these feedstocks were evaluated using a two-stage fermentation procedure involving both aerobic and anaerobic fermentation which took more than 2 months to complete. It was also observed that the fruit flavors gradually deteriorated over a two months period. The other issue that was considered included the technical viability of the process based on retention time, and it was refined to successfully produce various fruit spirits within two weeks inclusive of fermentation and distillation. Feedstocks that are being assessed for the fruit spirits include star fruits, taro corms, ripe bananas, mangoes, coconut water, Vi and Samoan arrow roots.

During the UNSIDS Conference, the spirits were showcased and some participants had the opportunity to taste test them (photo 4).

Photo 4: Taste testing of fruit spirits at the UNSIDS Conference.

After assessment of the new production pathway for fruit spirit making, the locally available feedstocks that were evaluated (start fruit, ripe banana, baby coconut, arrow root and taro corm) had alcohol contents above 40% v/v. In collaboration with the Samoa Tourism Authority (STA), a blind sensory evaluation was conducted in March 2015 where members of the Samoa Association of Manufacturers and Exporters (SAME; potential up-takers of the developed fruit spirit making processes) and the Samoa Hotel Association (SHA; potential end-users of the final fruit spirit products) (photo 5), were invited to taste test the premixes made from the developed fruit spirit prototypes. Six fruit spirit prototypes premixed with either 'coke' or 'sprite' soft drinks were taste tested and the results show that all fruit spirit premixes were comparable with the imported "Absolute Vodka" premixes, with tasters preferring 'sprite' over 'coke' as the premix soft drink (figure 1).

Photo 5: SAME & SHA members taste testing the fruit spirit premixes.

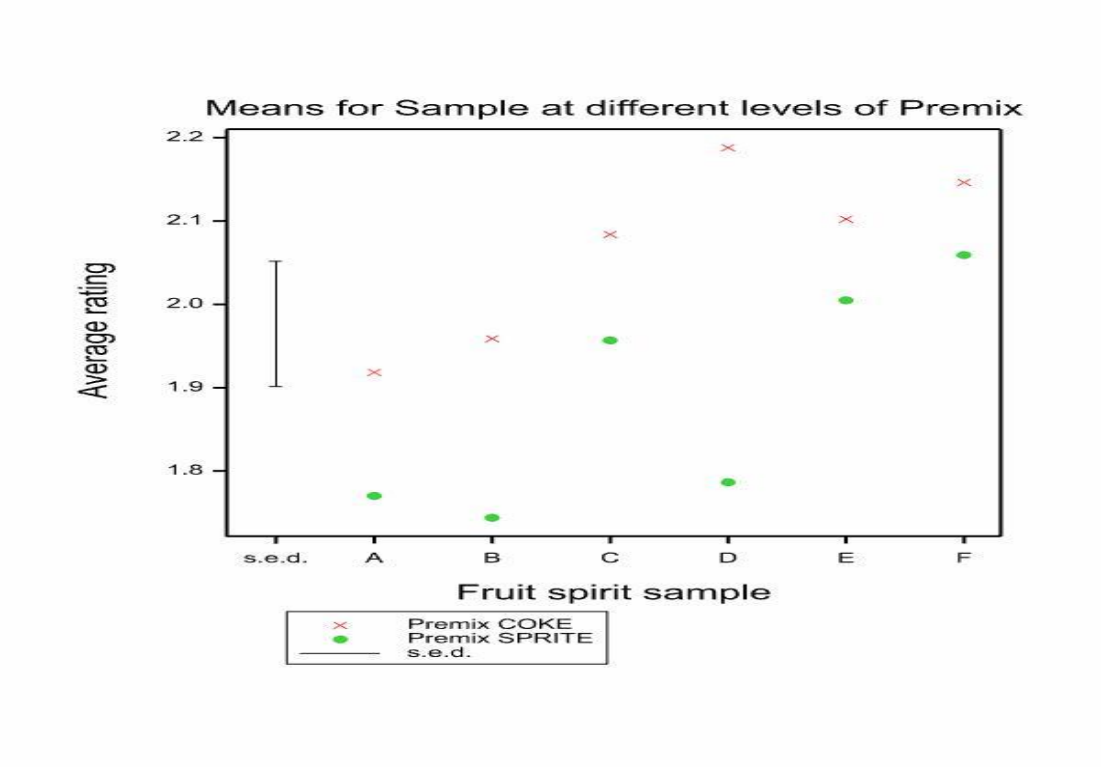


Figure 1: Average rating of taste for fruit spirit premixes (A – coconut juice, B – taro corm, C – "Absolute Vodka", D – pineapple, E – star fruit, & F – ripe banana), using a 5-point Hedonic scale (1, excellent,..., 5, very poor; n = 48).

Following on from the blind sensory evaluation that was conducted with members of SAME and SHA, research to investigate the shelf life of the fruit spirit prototypes is being conducted using the following two methodologies:

1. An accelerated test using extreme temperature of 50^{o}C (photo 6); and,
2. Normal room temperature test procedure (photo 7).

Photo 6: Accelerated testing procedure using an incubator.

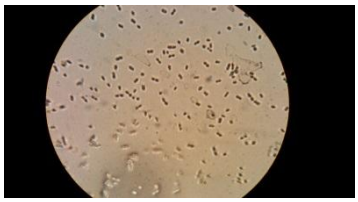
Photo 7: Room temperature testing.

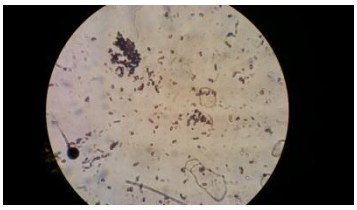
Further research will be conducted in the next financial year to ascertain how to maintain and stabilize the alcohol content in the six prototypes to a maximum of 40-45% v/v, which is the desired alcohol content in most of the imported alcoholic spirits.

d) Photosynthesis Bacteria Evaluation Research

SROS is collaborating with EPC to investigate a remedy to address the issues of bad odor released from the Afulilo dam. The focus of the collaboration is to cultivate the photosynthesis bacteria that can consume the hydrogen sulphide suspected to be the source of the bad odor released from the water outlet of the dam. Soil samples were collected from Saleimoa, Taeleafaga and Afulilo to isolate the photosynthesis bacteria using plate cultivation. The samples were collected from mangrove areas – both submerged and surface areas. Out of the three locations, Taeleafaga and Saleimoa showed promising results, and as such, attention was given to both locations and five samples were collected to isolate the photosynthesis bacteria. Method development for isolation and cultivation were evaluated and screened by ERED before finalising the most preferred method for the culture, isolation and purification of the bacteria.

Studies were conducted to assess the effectiveness of the photosynthesis bacteria, which has been successfully cultured, isolated and purified in the laboratory (photo 8), in consuming hydrogen sulphide and how much of it (in g/L) produced per gram of hydrogen sulphide consumed on a daily basis, with preliminary results shown in figure 2. Initial hydrogen sulphide concentration was 30 ppm before different levels of the photosynthesis bacteria (BP) were added. The 2% level of the bacteria showed that it can consume up to 47% of hydrogen sulphide within 10 days, while the 10% level can consume up to 67% of hydrogen sulphide. This confirms that the photosynthesis bacteria isolated from samples collected from Taeleafaga and Saleimoa have the potential to consume significant amounts of hydrogen sulphide within a period of 10 days. The ability of the photosynthesis bacteria to consume hydrogen sulphide has potential application to reduce the undesirable hydrogen sulphide odor continuously generated at the Afulilo hydropower station which is causing dissatisfaction to the dwellers in the nearby villages.





(a) Photosynthesis bacteria under microscopic view

(b) Photosynthesis bacteria during cultivation and on the 10th day.

Photo 8: Photosynthesis bacteria researched for its effectiveness in reducing levels of hydrogen sulphide in reduced water conditions.

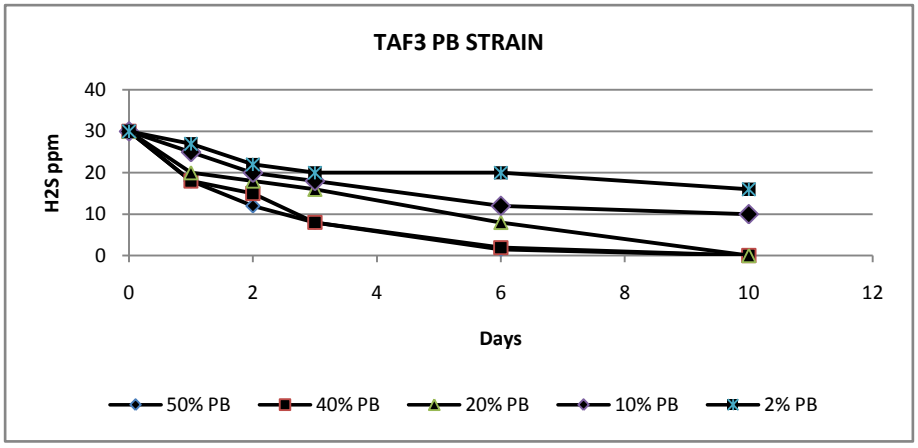


Figure 2: TAF3 photosynthesis bacteria strain

DNA extraction of the photosynthesis bacteria conducted by PFTD produced low yields (photo 9) and large samples are now being prepared to produce high DNA yields prior to sending to University of New South Wales (UNSW; Australia) for DNA sequencing and identification.

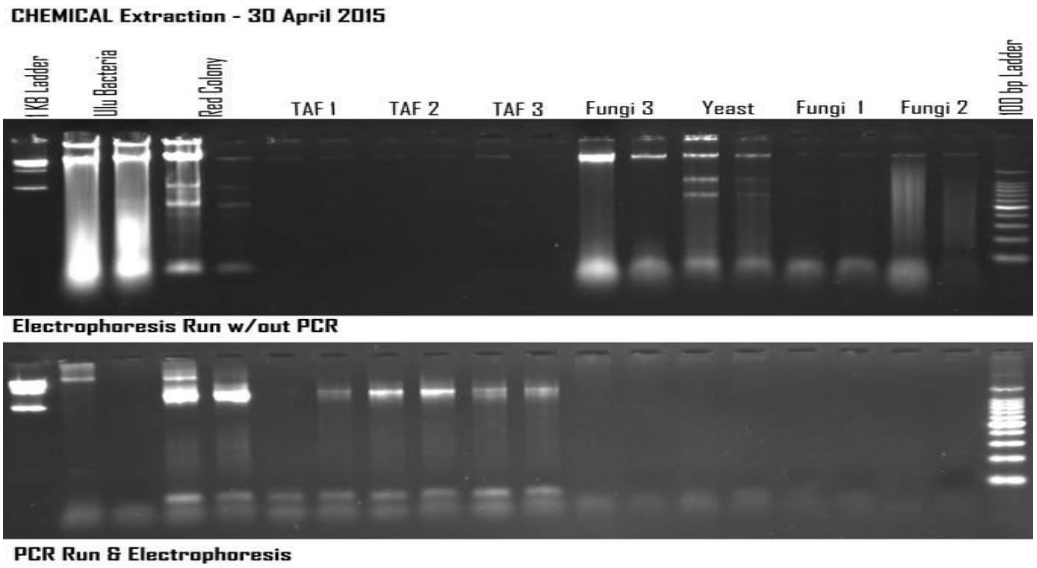


Photo 9: DNA extraction results for photosynthesis bacteria

Further evaluation of the photosynthesis bacteria for use in agriculture, such as application in soil to enhance the germination performance of seeds was also conducted in the laboratory in controlled environment (incubator) at 25^{o}C (photos 10 & 11).

photosynthetic bacteria **photosynthetic bacteria media** **water (control)**

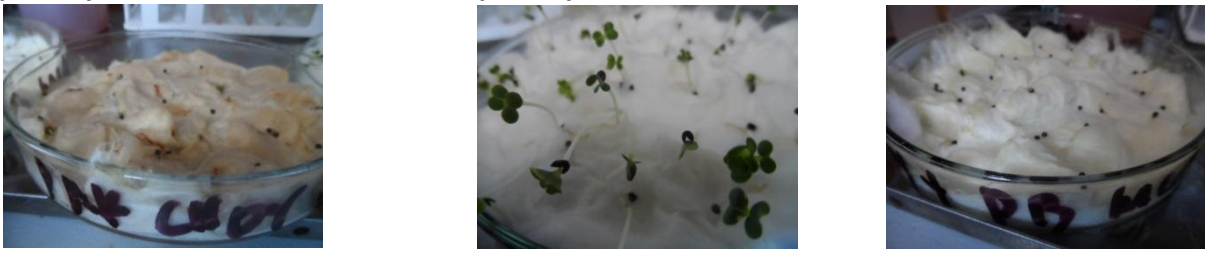


Photo 10: Evaluation of photosynthesis bacteria for agricultural use.

Water **Diluted bacteria solution** **Concentrated bacteria solution**

Photo 11: Use of soil in controlled environment.

After 3 days, the seeds started to germinate with the concentrated bacterial solution resulting in more sprouted seeds reaching average shoot length of 7 cm in less than a week, indicating the usefulness of the photosynthesis bacteria to improve plant growth.

The MNRE has also provided funding to SROS by way of a signed consultancy contract to the value of SAT$20,000 from its Water Sector Research Grant, to continue with this important research on the effectiveness of this bacteria in removing the undesirable hydrogen sulphide odor from water bodies.

e) Japanese Embassy-funded Sustainable Growth of Fragrant plants for Poverty Reduction Project

In February 2015, the Embassy of Japan (Samoa Office) and SROS signed a Grant Contract to the value of USD$94,912 to fund a project titled, "Sustainable Growth of Fragrant plants for Poverty Reduction", to develop and commercially apply economically viable plant resources for the well-being of the Samoan people at the grassroots level (photo 12). In collaboration with STA, MWCSD and MNRE, the project is designed to directly benefit the grassroots level as well as contribute to the socio-economic development of Samoa by using cost effective biotechnologies on plants which are abundant, well grown and economically viable.

Photo 12: Signing ceremony with the Ambassador of Japan (H.E. Kazumasa Shibuta) for the Grant Contract.

It entails the use of plant biotechnology to exploit the resources abundantly available at different locations spread across the islands of Savai'i and Upolu. The project is specifically directed at the propagation of various beautiful orchids and the extraction of aromas from fragrant plants. Many rural communities will benefit directly from the knowledge and know-how by using the technology effectively to produce orchids and aroma which can be sold for income. These benefits will encourage rural communities to conserve valuable and endangered native Samoan plants.

The bulk of the grant is being used to procure equipment from Pacific International Ltd (Tokyo, Japan) and building materials (Taylor Built Ltd, Auckland, New Zealand) for a nursery, to propagate selected orchids and extract essential fragrant oils. At the end of the project life, the equipment will be transferred to selected project stakeholders via a call for expression of interest (EOI) following our Government procedures, to commercialize orchid propagation and fragrant oil extraction for income generation and employment creation.

The propagation of orchids using locally available popular varieties has commenced utilizing glassware and growth media prepared using ingredients available at SROS. This is one of the two main activities of the project which also involves capacity building of SROS scientists in the field of plant biotechnology. The skills and know-how that will be acquired by the scientists will be transferred to the other project partners (Government agencies and selected stakeholders from rural communities) as the project progresses.

Selected SROS scientists are being trained in manual pollination and propagation of orchids both in the laboratory (photo 13) and out in the field (photo 14), and tissue culturing of orchids (photo 15), by Dr. Kenji Sakamoto (Senior JICA Volunteer on a 2-year assignment with SROS).

Photo 13: Seed propagation in the laboratory.

Photo 14: Orchid manual pollination and crossing in the field.

Photo 15: Tissue culturing of orchids.

f) Biomedical Screening Research

Under the guidance of Dr. Kenji Sakamoto, the screening of about 60 plant and 40 marine samples collected from Vailima Botanical Garden, and Vailele and Vaigaga reefs, respectively, showed that four plant species (figure 3) and two marine species (figure 4) showed promising effectiveness in inhibiting the activity of the alpha-glucosidase enzyme which is responsible for high sugar levels in blood causing diabetes.

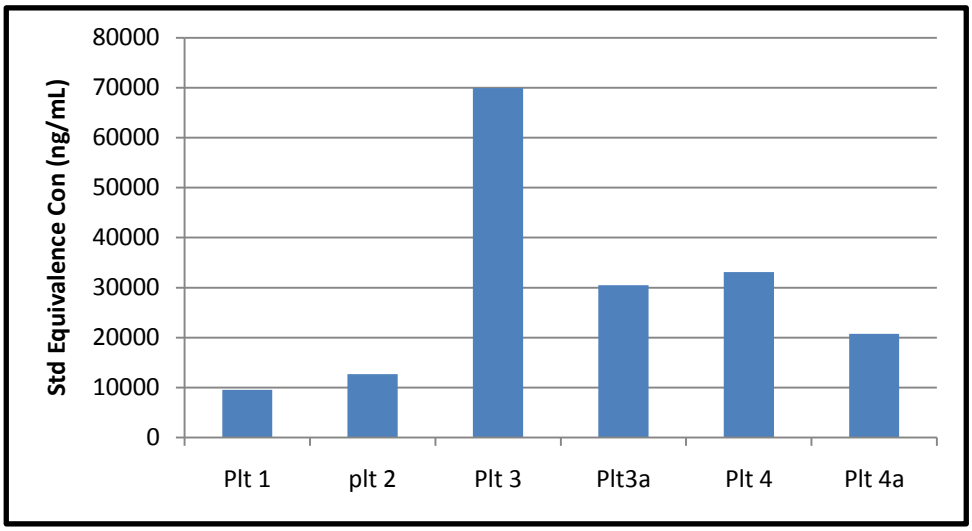


Figure 3: Effectiveness of inhibiting activities of alpha-glucosidase (plant samples).

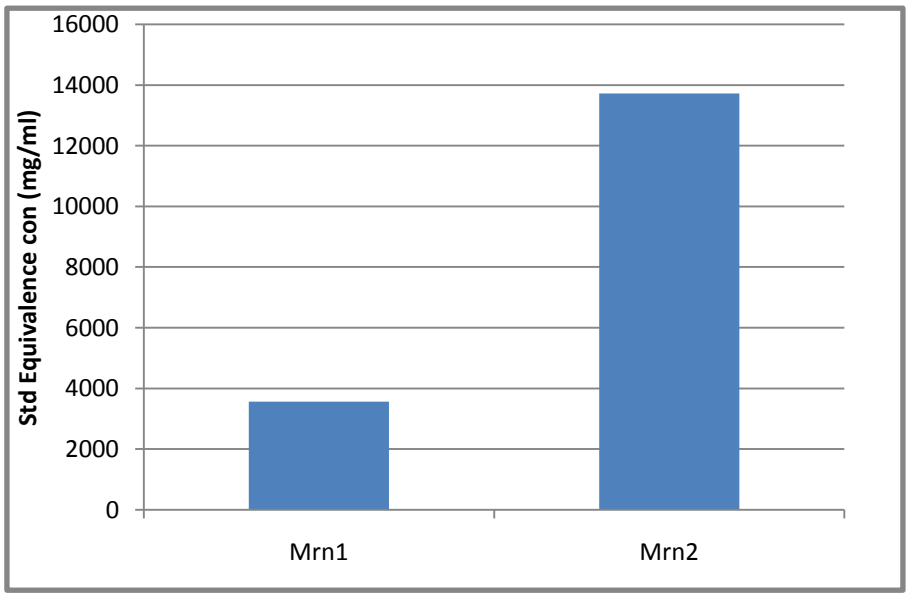


Figure 4: Effectiveness of inhibiting activities of alpha-glucosidase (marine samples).

SROS is preparing documentations for patent application to patent the six plant and marine species identified above, in consultation with MCIL to protect these species under international patent law. Furthermore, screening using the same extracts from the collected marine and plant samples is being conducted to evaluate their effectiveness in inhibiting the activity of the lipase enzyme which is responsible for obesity.

(ii) Plant & Food Technology Division (PFTD)

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.

The following sections highlight work in progress of PFTD during this financial year.

a) PARDI-funded Taro Revitalisation Project

Australian Government
Australian Centre for International Agricultural Research
PARDI

Funded to the value of AUD$35,000 received from PARDI in the financial year 2012/2013, all the activities for SROS's assigned component under the multi-stakeholder programme which also involved SPC, MAF, USP and Samoa Farmers Association (SFA) have been completed.

As reported in the SROS Annual Report for financial year 2013/2014, SROS was provided in financial year 2012/2013 with tissue-cultured seedlings of new taro lines from Cycle 8 breeding activities conducted by SPC and USP at USP Alafua Campus, Samoa. The growth of the new lines were monitored during the early stages of development as well as their susceptibility to the taro leaf blight (TLB). The taro lines were then screened and subjected to sensory evaluations alongside the established taro varieties namely Tausala-ni-Samoa from Fiji, Samoa 1 and Samoa 2 from Cycle 5, and Maagiagi from Cycle 6, which were used as benchmarks for comparison purposes.

The results indicated that taro line C7-102 x C7-083 was comparable in both taste and nutritional composition to the benchmarks/exported varieties Samoa 1 and Samoa 2 from Cycle 5, and the Tausala-ni-Samoa from Fiji. All four phenotypes produced from C7-102 x C7-083 had similar nutritional content, particularly their carbohydrate content which has been established as the major determining factor of a good tasting taro. The different colours of the four phenotypic headsetts are an advantage as it can supply the two specific market demands – pink and white taro.

The headsets of the four C7-102 x C7-083 phenotypes were replanted onsite at SROS as a source of planting material (photo 16), and were transferred to the SPC Crop Breeder (Mr. Tolo Iosefa) and MAF to multiply and bulk up for further evaluation of their growth and yield performances under different agro-climatic conditions, by way of a multi-location trial and possibly in collaboration with farmers under the successful SPC funded Taro Improvement Programme (TIP).

Photo 16: C7-102 x C7-083 phenotypes replanted onsite at SROS.

The Manager of PFTD, Tuimaseve Kuinimeri Asora-Finau, attended the PARDI's end of project workshop held in Suva, Fiji in June 2015. The outputs/results from the project were presented by the SPC Crop Breeder on behalf of the project team from MAF and SROS. The workshop participants commended the SPC Crop Breeder, MAF and SROS for the hard work which has now resulted in Samoa's taro industry making a strong comeback both in the local and export markets.

The following project completion report of SROS's component was also submitted at the Fiji workshop, and was uploaded onto the ACIAR and SPC websites:

Kuinimeri Finau-Asora, Siope Pele, Alfram Nukuro, Militi Tagoai, Annie Toailoa, Sosaiete Fa'atuiese and David Hunter (2015) "Developing a clean seed system for market ready taro cultivars in Samoa – screening of Cycle 8 taro lines for taste and nutritional composition". End of Project Report – SROS Component. 46 pp.

b) PHAMA-Funded Frozen Taro Project

PHAMA
Pacific Horticultural & Agricultural Market Access Program

Funded to the value of AUD$22,000 received from PHAMA as reported in the SROS Annual Report for financial year 2013/2014, the project is now completed and some of the major findings include:

1. Quality frozen taro can be produced by taking the least costly pathway of slicing, no blanching, direct sealing and slow freeze;
2. A product with slow turnaround (more than three months) can maintain best quality if blanched and vacuum packed;
3. Blast freezing does not contribute significantly to product quality over slow freezing. For commercial operations however, it will allow faster processing of more product volume within a short period;
4. Directly sealed product is just as good as vacuum packaged in terms of taste and appearance for cooked product. For marketing purposes, vacuum packaged product are more appealing;
5. The size of taro pieces in a pack is an important consideration not only for uniform cooking but also less energy consumption in terms of shorter cooking times; and,

6. Samoa 2 is significantly better than Samoa 1 in terms of sensory qualities when frozen up to three months, and they are similar when frozen up to six months irrespective of the processing pathway used.

Further financial assistance was provided by PHAMA for two exporters [Samoa Agromarketing (SAM) and Farmer Joe] as well as SROS to process and take frozen taro to be taste tested and promoted during the SAME "Buy Samoa Made Products" Trade Show held in Sydney, Australia in March 2015 (photo 17). The aim was to gauge consumer feedback on the product and its possible entrance/acceptance in the Australian market. The two exporters focused on the logistics of getting the taro into Australia as well as selling product samples, while SROS was responsible for conducting a consumer evaluation of the cooked product. The Australian market has not been accessible to Samoa's fresh taro since the taro leaf blight and this provided an opportunity to test the research outcomes and findings.

Photo 17: Owner of SAM Mr. John Lowe (middle) & SROS scientists at the SAME Trade Show, Sydney, Australia.

For the taste test exercise, the Fijian fresh and frozen taro products sold in Australia were cooked and compared with the Samoan frozen taro product samples. Most people who attended the trade show only wanted to taste the Samoan taro as they said they were already quite familiar with the taste of Fijian fresh and frozen taro products. The feedback was better than expected with many people being pleasantly surprised that it was actually frozen taro and not fresh (figure 5).

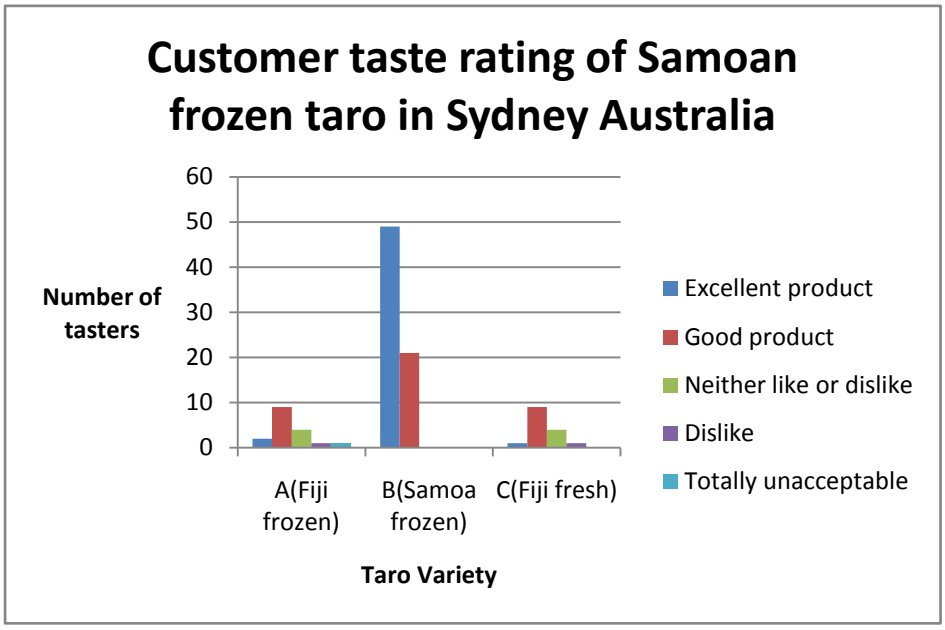


Figure 5: Consumer feedback on taste of Samoa's frozen taro.

Some very important observations were made during the trade show as follow:

1. Most if not all consumers who bought the frozen taro product did not know how to properly cook frozen taro. They all thought it had to be thawed before cooking and so the SROS team made sure all people buying were informed of this critical information;
2. Of the many supermarkets and stores visited in Liverpool and nearby areas in Sydney, only a few sell frozen taro and even less so for fresh;
3. During the cooking of products for sensory, the non-uniformity of taro pieces and large sized taro pieces made preparation quite tricky. Some pieces were getting over cooked while were still hard and the larger pieces took too long to cook. The report prepared by SROS is an important starting point for any business interested in processing frozen taro;
4. Consumers usually do not read instructions on product labels so it is critical that exporters inform their distributors to advise their outlets on how the product is cooked. A simple visible sign on freezers containing product like "this product should be cooked frozen and NOT THAWED" should suffice. Or perhaps have this BOLDED on the actual package so it catches the eyes of customers. Incorrect preparation gives poor quality taste resulting in no repeat purchases; and,
5. Fijian fresh and frozen taros are sold at AUD$5/kg in Sydney. In Canberra, frozen taro is sold at AUD$7.50/kg. The SAM product was sold at AUD$5/kg bag and the customers were quite happy to pay this price considering the taste of the product.

The exporters saw firsthand the great feedback and demand for Samoa's frozen taro and have established contacts with interested distributors to receive and sell their frozen taro products in Australia. This marked a successful short term outcome for the PHAMA-funded project as Samoa's taro can now potentially re-enter the Australian market with a product that targets customers' preference and willingness to buy.

The following project completion report was submitted to PHAMA and Samoa Market Access Working Group (MAWG) committee, and circulated publically as it provides useful information for local businesses interested in producing and/or exporting frozen taro products:

Kuinimeri Asora-Finau, Alfram Nukuro, Siope Pele, Annie Toailoa, Militini Tagoai and David Hunter (2015) "Ready-to-cook frozen taro for Samoa Export Market". Research on the combined effects of blanching, methods of packaging and freezing on consumer preference for frozen taro after 3 & 6 months storage. 26 pp.

c) Turkey-Funded Breadfruit Pathogen Phylogenetics Project

Funded to the value USD$50,000 received from the Government of Turkey in the financial year 2013/2014 as reported in the last SROS Annual Report, a few SROS scientists were trained on DNA extraction using both simple boiling and complex chemical methods. The DNA was extracted from bacteria, yeast and fungi isolated from rotten breadfruit and papaya. The standard operating procedure (SOP) for the operation of DNA extraction equipment has also been developed.

Extractions are always repeated with the different microbes isolated (bacteria, yeast and fungi) for reproducibility of results and an e-log has also been created detailing photos for the various stages; an example is given in figure 6. Our scientists are now confident in following and carrying out the extractions as per SOP and using the equipment. Training is only conducted when breadfruit is in season and this has delayed the progress and completion of this project.

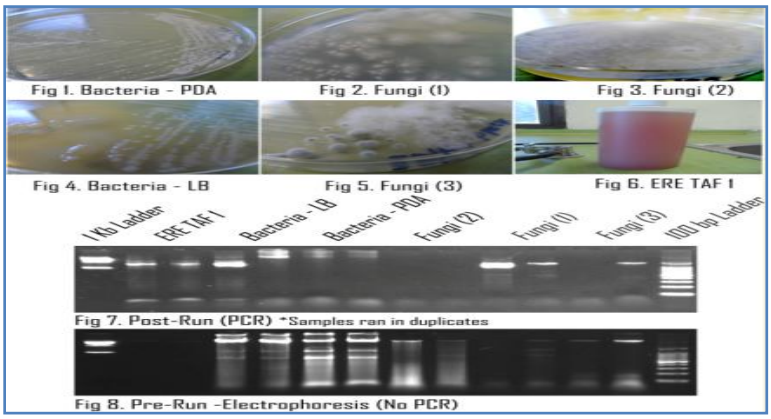


Figure 6:

The software for the imaging of DNA bands was also trialed, but this is an area which has now been identified as requiring more technical assistance, as the trained staff did not receive any training before on the applications of the software. The research is continuing and the SOP continues to be updated.

PFTD also assisted ERED to extract DNA from photosynthesis bacteria isolated for one of their projects, and the samples have been prepared to be sent to UNSW for DNA sequencing.

d) USAID- and PHAMA-funded Fish Analysis Project

EMBASSY OF THE UNITED STATES OF AMERICA

PHAMA
Pacific Horticultural & Agricultural Market Access Program

The project entitled '*Developing analytical methods for histamine, mercury and lead in fish and related products*' has been completed. This project received funding from the US Embassy to the value of USD$20,000 in the financial year 2011/2012, for the development of testing methods to test for the abovementioned contaminants in fish. The PHAMA programme also provided financial assistance to the value of AUD$20,000 in the financial year 2013/2014, for capacity building in method development and verification which greatly assisted in achieving the project outputs. This effort has resulted

in the extension of SROS's Chemistry accredited testing scope to be able to test for the critical regulated fish contaminants – histamine and mercury.

The following project completion report was submitted to the US Embassy Office in Samoa and PHAMA Office in Fiji as mandatory requirement for the funds received:

Kuinimeri Asora-Finau, Luanda Epa, Phillip Reti, Moon Chan, Fa'ataga Fa'ataga, Fiame Leo, Annie Toailoa, Siope Pele and Tulia Molimau (2014) Technical Completion Report of a USAID-funded Project on "Developing analytical methods for histamine, mercury and lead in fish and related products". 36 pp.

e) Vanillin Extraction Project

A fourth trial was conducted to further confirm the results from the third trial as reported in the last SROS Annual Report, as well as to analyse the change in vanillin concentration after dilution (to 35% alcohol) and storage for a month. Similar to the third trial, a three-fold extraction was used with the daily application of three hours of ultrasound over six days. The results generated from the fourth trial are illustrated in figure 7. Higher vanillin concentrations of the ultrasound samples confirmed the positive impact of the ultrasound treatment when compared to the control samples (no ultrasound). But when the ultrasound and control samples were diluted and stored for a month, analysis indicated a large reduction in vanillin concentration in ultrasound samples when compared to the controls (normal extraction samples).

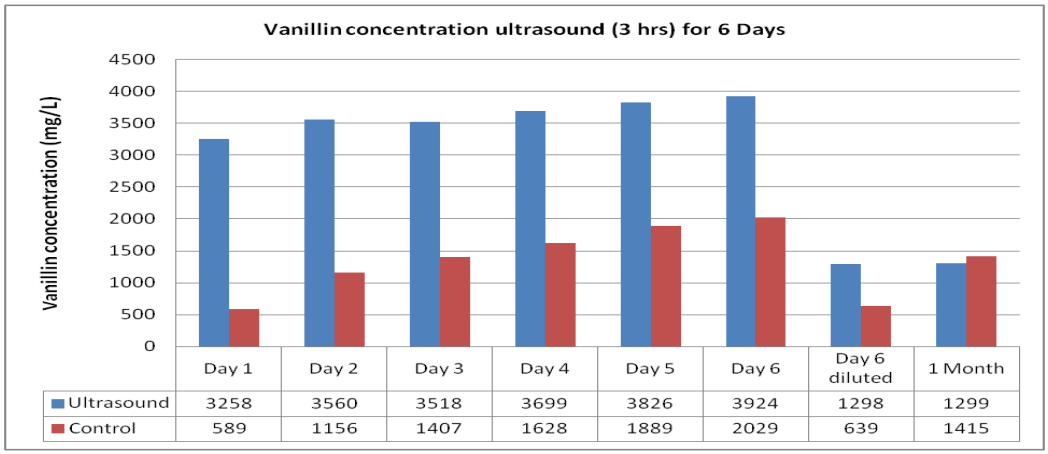


Figure 7: Vanillin concentration ultrasound 3 hours for 6 Days**.**

f) PHAMA –funded Cocoa Fermentation work

PHAMA
Pacific Horticultural & Agricultural Market Access Program

The PHAMA programme provided SROS with AUD$10,000 in this financial year to compare three pathways of partially processing cocoa beans earmarked for chocolate making (figure 8). The aim of the project is to determine the drying and fermentation conditions to produce quality cocoa beans for chocolate making. A solar dryer prototype (photo 18) was also constructed onsite to monitor temperature levels during daytime and assess whether it will be able to dry cocoa beans down to its desired moisture level.

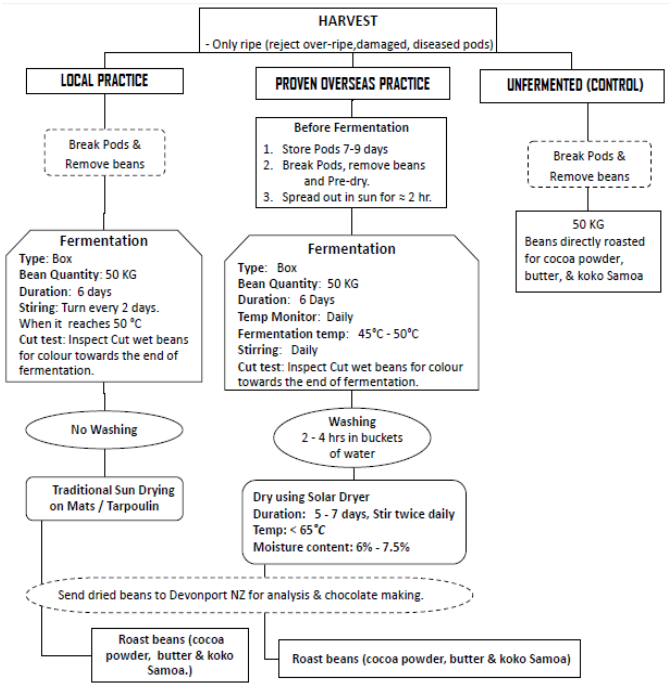


Figure 8: SROS Cocoa research design.

Photo 18: Solar dryer prototype onsite at SROS.

Consultations with two local farmers (one from Savaii and one from Upolu) who are owners of large cocoa farms (which also have the popular Trinitario variety), have confirmed their participation in this project, and will be the source of cocoa beans for the research. A producer of chocolate, Devonport Chocolates in Auckland, New Zealand, has also agreed to receive the fermented beans for the following evaluations:

1. Cocoa bean assessment;
2. Making cocoa mass; and,

3. Chocolate tablet making and assessment.

Fermented cocoa beans from initial trials using cocoa beans from Upolu farm were sent to Devonport Chocolates for bean assessment and chocolate making. Two lots of samples sent were fermented using the local method but dried in two different ways (sun and forced hot air) and the third lot of samples was fermented using the overseas method and dried using the solar drier. Chocolate bar samples (cocoa & sugar only; photo 19) produced using the three lots of cocoa bean samples, were received from Devonport Chocolates for sensory evaluation by SROS, and the same will be conducted by Devonport Chocolates for comparison with the SROS results. The next phase of the project is to source cocoa beans from the Savaii farmer to undergo the same process and evaluation as per above described.

Photo 19: SROS chocolate samples.

This project links with the bigger Trade, Commerce and Manufacturing (TCM) Tier 2 project coordinated by MCIL, in which SROS has been appropriated USD$400,000 for the next three years to assist with the development of cocoa and coconut value adding initiatives, in collaboration with WIBDI and STEC.

g) *FAO Consultancy* Fruits and Vegetables Postharvest loss and food safety

A consultancy contract to the value of USD$17,000 was successfully negotiated and signed with FAO in this financial year to undertake postharvest loss and food safety risk analysis for selected fruit and vegetable chains. This is in support of the Technical Cooperation Programme (TCP) funded by FAO and executed by MAF and SBS for the project on *'Improving the capacity for evidence-based policy monitoring and development'.* The project places much emphasis on developing policies based on up-to-date data and information to assist in reducing food safety and nutritional insecurity in Samoa. Manager of PFTD (SROS consultant) worked in collaboration with the lead consultant, Professor Steven Underhill, from the University of Sunshine Coast, Australia. The consultancy had a six months' timeframe and started in February 2015. Consultancy work is one of SROS's revenue generation activities to achieve our annual cost recovery targets to support our operations.

The initial stakeholder consultation workshop was conducted at USP Alafua Campus by lead consultant Professor Underhill. The workshop was to gauge a list of priority fruits and vegetables from the farmers for the project to focus on. Leafy green vegetables, tomatoes, lady fingers and taro were identified as priority crops by those who attended. Professor Underhill commenced his farm visits to identify and quantify postharvest losses at the local markets assisted by a SROS research scientist who was assigned to the consultancy as part of our staff development activities. SROS's part for the consultancy is the conducting of food safety analysis for the supply chains of selected fruits and vegetables by utilizing microbial laboratory analysis to test for *E. coli, L. monocytogenes* and *Salmonella* at different points along each chain from point of harvest to point of domestic consumer purchase.

The vegetables included in the study (bok choy cabbage, lettuce, coriander, basil, rocket, watercress and round cabbage) were from different farms, a market vendor and a store. The findings from this consultancy work are as under-listed:

- *E. coli* to be the major concern not only from a hygienic perspective but also for the potential health risk when consuming leafy green vegetables. Only two farms provided vegetables that were completely compliant to the draft local food standards, and who were implementing thorough washing on farm with what was assumed to be clean water; and,
- The quality of water available was most likely a contributing factor to microbial contamination for the other farms hindering their ability to produce safe vegetables. Cross-contamination of vegetables was high as it travelled from farm through the supply chain, with results indicating the poor cold storage conditions as well as during display for selling.

From this study, the occurrences of microbiologically related food safety risks for vegetables in Samoa are most likely impacted upon by the following factors:

- The availability of clean quality water for on farm use;
- The practices implemented by the farms during growing, harvesting and postharvest activities;
- The storage facility conditions and its use;
- The preparation and display of goods for sale; and,
- The limited knowledge and/or concern for food safety by those involved throughout the chain.

In light of the above findings, these recommendations were suggested in the SROS consultancy report for improvement and future work:

- Future studies should determine the proportion of population serviced by the different means (subsistence, stores, markets, road side stalls) for vegetables and their associated food safety issues;
- The use of good agricultural practices and the development of practical code of hygienic practices for fruits and vegetables;
- The draft local regulations needs to include *L. monocytogenes* as it is an important food health and safety indicator; and,
- Pesticide (chemical) residues to be investigated as another source of food safety concern.

The findings will be presented at a planned FAO workshop in July 2015 prior to finalization and submission of the project report.

h) Frozen breadfruit slices and fries

Funded from SROS budget and project savings, research has started to identify the optimum process for producing quality frozen breadfruit slices for potential domestic and export markets. The experimental design employed is the same one that was used for the completed frozen taro project funded by PHAMA (figure 9). The requirements for pre-treatment (blanching), kind of packaging and the method of freezing need to be scientifically evaluated to ensure a quality product is developed.

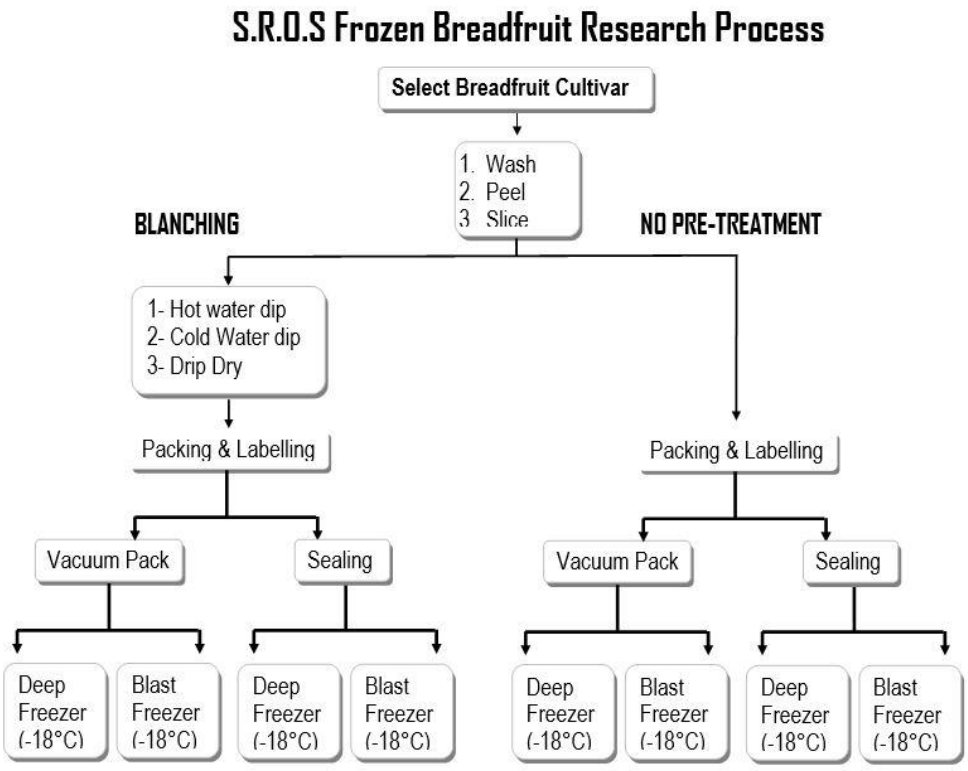


Figure 9: SROS research design for frozen breadfruits.

Research has also started to produce frozen breadfruit fries (photo 20), and is focusing on identifying the optimum blanching time before investigating the use of different means of blanching – hot water versus oil.

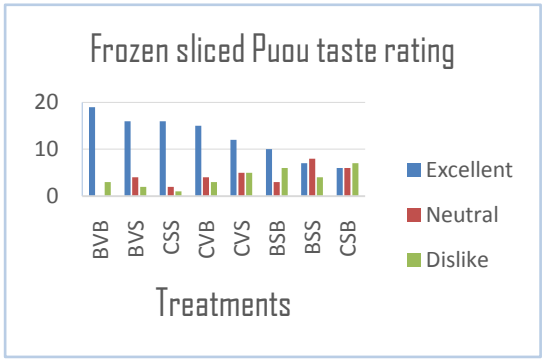
Photo 20: Frozen breadfruit fries.

The first taste testing was conducted after three months of freezer storage. There were 8 prototypes resulted from the research (figure 8), and they were coded as follows according to order of pre-treatment, packaging technology, and freezing method:

1. Control-Vacuum Pack-Blast freeze (CVB)
2. Control-Vacuum Pack-Slow freeze (CVS)

3. Control-Sealed-Slow freeze (CSS)
4. Control-Sealed-Blast freeze (CSB)
5. Blanch-Vacuum Pack-Blast freeze (BVB)
6. Blanch-Vacuum Pack-Slow freeze (BVS)
7. Blanch-Sealed-Blast freeze (BSB)
8. Blanch-Sealed-Slow freeze (BSS)

The taste evaluation results in figures 10 and 11 show that BVB and BVS were the most promising processes. Comparing with the findings from the frozen taro study, blanching and packaging were found to contribute to the overall quality and appearance of the frozen breadfruit slices. This is probably due to the highly perishable state of breadfruit compared to taro which is a firm product.



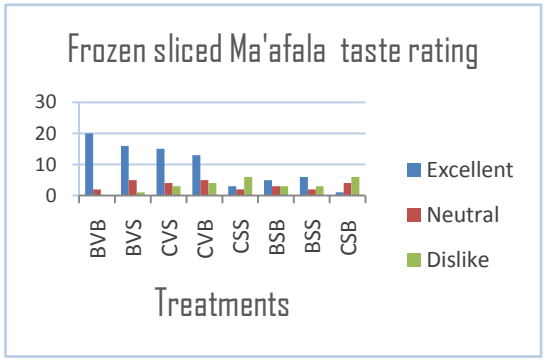


Figure 10: Results from Puou sensory.

Figure 11: Results from Ma'afala sensory.

(iii) Industrial Research Division (IRD)

The IRD 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.

The following sections highlight work in progress of IRD during this financial year.

a) Gluten-free Breadfruit Flour

SROS prepared lunch for the Cabinet Development Committee (CDC) meeting held in August 2014 using gluten free breadfruit flour as the major ingredient for cooking. This lunch was directed by the Hon Prime Minister, for SROS to promote the types of food that can be prepared and cooked with the breadfruit flour.

About 800 kg of the breadfruit flour was produced for promotion purposes during the UNSIDS Conference held in Samoa in September 2014. The WIBDI expressed the most interest in promoting the breadfruit flour at the Conference in partnership with the New Zealand based C1 Espresso bakery. Samples of the flour were sent to C1 Espresso prior to the Conference for cookie and pastry recipe formulations and positive feedback was received. Cookies and pastries using the flour were sold at the WIBDI kiosk in the Conference venue and which also received positive reviews. SROS also supplied WIBDI and C1 Espresso with the flour to prepare light refreshments for the SPC Pacific Organic and Ethical Trade Community (POETCom) coordinated side event on Organic Agriculture at the Conference

(photo 21). In collaboration with STA, breadfruit flour was also supplied to a few local food vendors at the Teuila Festival to promote gluten free food ingredients, and Vailima Breweries Ltd to brew their bottled Vailima Natural beer which was launched during the Conference.

Photo 21: Light refreshments produced from gluten free breadfruit flour at Organic Agriculture event, UNSIDS Conference.

SROS's ongoing efforts in partnership with Vailima Breweries Ltd with the brewing and sale of their popular Vailima Natural beer, to induce local manufacturers to commercialise breadfruit flour production has finally materialized. A local manufacturer, Natural Foods International Ltd, formalised a supply contract with Vailima Breweries Ltd in December 2014, and has taken over from SROS to supply the flour for the continuous brewing of the Vailima Natural beer. This is a milestone for SROS as it has realized two of its key objectives, namely: to undertake scientific and technical research with the primary aim of adding value to local resources and services, and; to establish partnership with the private sector and commercial interests to support the Organisation's activities.

The Tindall Foundation
Contributing to a stronger New Zealand

With financial support from the NZ Tindall Foundation to the value of NZD$10,000 received in the financial year 2013/2014, breadfruit flour samples were sent to the University of Hawaii and Kansas State University in USA, Gluten Free Made Easy and C1 Espresso bakeries in NZ, and Pacific Islands Centre in Japan, to assess its performance as a gluten free alternative to wheat flour for cooking and baking. This is an important part of SROS's ongoing product development activities which is to collaborate with interested local and overseas end-users on our developed value-added products to ensure their commercial potentials are realised. A 19-page report highlighting the promotional activities undertaken by SROS for the gluten free breadfruit flour was submitted to the NZ Tindall Foundation as part of the financial support agreement.

SROS continued to negotiate with interested local and overseas business entities to realise the commercial potential of the breadfruit flour for import substitution and export markets. In April 2015,

a meeting was held with the Management of Yazaki EDS Samoa Ltd who have shown interest in the breadfruit flour as part of their business diversification initiatives to retain their staff numbers, in view of the gradual reduction of their major wire harnessing activity and its eventual closure in 2017. The business plan for breadfruit flour processing was provided to them for their purposes post signing of a non-disclosure agreement.

b) Avocado Oil

Negotiations with the winning bidder Apia Bottling Co. Ltd on the Sale and Purchase Agreement to the value of SAT$275,000 (exclusive of 15% VAGST), and Memorandum of Understanding (MOU) for the SROS industrial avocado oil production equipment ended with the official withdrawal by Apia Bottling Co. Ltd citing limited financial resources being reallocated to one of their current development projects, namely hotel rebuilding at Vaisigano. In addition, they were concerned about the long term sustainability of fruit supply for oil production, given the low number of existing trees of the desired avocado varieties (Hass and Fuerte), and hence the need to foster a planting campaign to support oil production in the long term.

The SROS Board of Directors and subsequently the Tenders Board in their respective meetings held in June 2015 endorsed the re-advertisement for expression of interest (EOI) for the oil processing equipment, and it will be re-advertised in the local print media and relevant Government Ministry websites in July 2015.

c) Coconut Oil Refinement

Funded to the value of $400,000 received from our Government in the financial year 2012/2013, laboratory trials on three experimental filtration materials (biochar, activated carbon and fine sand) are ongoing to finalise a prospective filtration process to reduce the off odor and flavor of the filtered coconut oil for cooking purposes. Filtered oil samples that will be collected from the various combinations, will be subjected to chemical analysis and sensory evaluation, to ascertain efficiency of odor removal as well as percent oil recovery, in order to select the most effective combination to be used for coconut odor removal.

d) Avocado Margarine

Funded to the value of $393,965 received from our Government in the financial year 2012/2013, laboratory studies to finalise a formulation for a table-spread margarine using locally produced avocado and coconut oils are ongoing. Analysis for shelf life and sensory qualities of the prototype samples continued, using selected chemical and microbiological parameters as indicators for sensory and shelf life qualities. Dr. Ron Bowrey (SROS Honorary Research Fellow) visited SROS in July 2014 and April 2015 to assist with the avocado margarine making, and set up a small scale batch making method that can be used by the local communities.

(iv) Technical Services Division (TSD)

The TSD is responsible for Output 5 – Commercial Technical Services – which provides the technical analyses, to support the private sector and exporters in their efforts to expand primary food production, manufacturing/processing and the service industries.

The following sections highlight work in progress of TSD during this financial year.

a) Accreditation

SROS continued to work to maintain international accreditation of their testing laboratories under the ISO/IEC 17025 standard. SROS also continued to strengthen the technical competency and quality management system of our testing laboratories to assure customers that the test results for their samples are acceptable and recognised locally and abroad. The testing service provided by SROS continued to assist the private sector, in their efforts to drive economic growth and create job opportunities through exports and import substitution.

A follow up and extension assessment by International Accreditation New Zealand (IANZ) was carried out in August 2014, to determine conformity of SROS Chemical testing laboratory with the requirements of NZS ISO/IEC 17025:2005. The assessment reported that the Chemistry testing laboratory complied with accreditation requirements and in-house documented procedures. The assessment also noted that SROS Chemistry and Microbiology testing laboratories had implemented and maintained compliance with regards to the corrective action requests and recommendations raised during the last IANZ audit in December 2013. During the assessment, the assessors reviewed the chemistry test methods extension on analysis of histamine in fish and fish products by HPLC (In-house method), determination of mercury in fish and shellfish by atomic absorption (USEPA 245.6 modified), and energy (by calculation), and highly recommended accreditation upon clearance of minor conditions.

SROS laboratories participated in the Global Proficiency (GP) inter-laboratory competency programme (ILCP), to evaluate the reliability and accuracy of our results using accredited test methods. The ILCP samples received were meat and bone meal, and meat paste. The assessment and comparison to other international accredited laboratories showed that SROS achieved high standard and good results for analysis of macro-nutrients, general microbiology and pathogen. In addition to the Global Proficiency ILCP, SROS also participated in the Food Analysis Performance Assessment Scheme (FAPAS) ILCP and received samples for mercury and histamine analysis. This programme is to test for competency and accuracy of its newly established methods for mercury and histamine analysis, and with mercury analysis, our laboratories performed well. The participation of SROS laboratories in these competency schemes is not only for the verification and validation of its testing methods but it is one of the mandatory requirements of the accreditation arrangement with IANZ.

The annual surveillance assessment of SROS's testing laboratories was conducted in November 2014 by IANZ to determine conformity of our testing laboratories with the requirements of NZS ISO/IEC 17025:2005, and our testing laboratories were found to comply with in-house procedures and accreditation criteria, and were subsequently recommended to continue with accreditation status for the year 2015. Laboratory staff members were commended for the positive outcome of the assessment in that corrective actions were confined to equipment calibrations as the only anomalies found during the assessment. The IANZ assessor recommended SROS to utilise its capabilities to perform its own calibration work for some instruments. The surveillance assessment was for all accredited tests and extensions for both Chemical and Biological tests.

In May 2015, SROS hosted the SAME monthly meeting at Alaimoana Hotel. SAME is one of SROS's principal stakeholders/clients in the food processing and manufacturing sector, and the meeting rendered the opportunity for our Management to present on our mandated functions and technical capabilities, that are available to support the food processing and manufacturing related analysis needs for compliance to food quality and safety standards locally and abroad.

b) Narcotics Analysis

Narcotics analysis is an additional TSD service provided to assist the Ministry of Police (MOP) and Attorney General's Office (AGO) with court cases related to narcotics crimes under the Narcotics Act 1967. In the past, narcotic samples were sent to New Zealand for confirmation analysis, an undertaking which was costly to MOP and undesirable to AGO, as court cases were frequently postponed due to delays in the receipts of the narcotics analysis reports. These undesirable issues have been alleviated with the establishment of our Narcotics Laboratory to provide this service.

Initially, our Narcotics Laboratory was testing for *Cannabis sativa L.* material only as our authorised analysts were qualified for *Cannabis sativa L.* analysis only. Now, it has the capacity (analytical instruments and expertise) to test for methamphetamine (or ice) and its precursors (photo 22). Two TSD scientists were on NZ MFAT scholarship awards to New Zealand in this financial year where they were trained at the Institute of Environmental Science and Research (ESR), to qualify as authorised analysts for methamphetamine and its precursors. This additional essential service can cover not only the analysis of methamphetamine but other hard drugs as well.

Photo 22: Gas chromatography/mass spectrometry analytical equipment which is used for analysis of methamphetamine and its precursors.

The Quality Procedures Manual and allied Standard Operating Procedures (SOPs) for *Cannabis* and methamphetamine/precursors have been developed, reviewed and authorised by AGO to be used for drugs analysis. Furthermore, the service contract with MOP has been revised to include methamphetamine and allied analysis charges. It is expected that the revised service contract will be formalised between the two parties, MOP (Principal) and SROS (Contractor) in the first month of the next financial year. In this financial year, our Narcotics Laboratory received and tested a total of 62 *Cannabis sativa L.* samples and four samples for controlled drugs analysis, compared to 86 *Cannabis sativa L.* samples received in the last financial year.

c) Bottled Water Monitoring Programme with MOH

During this financial year, a total of 119 bottled water samples from various bottled water companies were received from MOH to test for compliance with the Samoa National Drinking Water Standards, and a total of 27 or 23% of the bottled water samples were found to be non-compliant with higher than desired/normal counts for Colliform.

d) Sodium Content in Food Items

This collaborative project between MOH and George Institute for Global Health in Australia, involved having SROS carry out the testing for sodium content in various food items. The main objective of the project was to monitor the current salt consumption patterns of our Samoan people and use the results to formulate strategies to help trim down the noticeably high salt content in food items consumed daily. More than 100 samples of various food items (2 replicates each) were submitted to SROS for sodium analysis, and the summary of results, a brief report and certificates of analysis (COAs) have been completed and submitted to MOH for their purposes.

e) SPC-Funded Soil Biodiversity Project

Funded to the value of AUD$50,000 received from SPC in the financial year 2011/2012 and in collaboration with the USP Soil Health project, the biological analysis to determine the effects of the biochar and *Mucuna* treatments on microbial activity in soils has completed. Two selected tests to determine the microbiological activity in the soil were fluorescein Diacetate (FDA) assay, an enzymatic analysis, and nematode counts. With the exception of chemical analysis for soil macro- and micro-nutrients, all other analyses have been completed. The project report is at the final reviewing stage and will be completed and submitted to SPC in the next financial year.

3.2 Progress in achieving the Corporate Plan (CP) for the year

During this financial year, significant technical progress has been achieved, critical strategies to facilitate the translation of technical developments into products and services suitable for uptake by relevant stakeholders have advanced considerably, and operational procedures continued to be improved. SROS nevertheless continued to seek to improve its ability to achieve its mandate and objectives as outlined by the SROS Act 2008 and Corporate Plan 2014-2017.

Corporate Plan Priority Objectives	Activity Outcomes
• To promote the national economy of Samoa based on research and development.	• Collaboration with the local and overseas food manufacturers to develop the international market for breadfruit flour, as funded by NZ Tindall Foundation completed. • Ongoing partnership negotiations with interested parties to start up commercial processing operations of avocado oil and breadfruit flour. • Ongoing negotiations by MOF (on behalf of STEC, SROS & MNRE) with IRENA/ADFD to finalise terms and conditions for a USD$7M soft loan agreement to upscale and commercialise biodiesel production/biomass gasification for electricity generation. • Promotion of frozen taro products in Sydney, Australia. • Cost-effective processing pathway for frozen taro completed and a report on project findings and recommendations disseminated to interested stakeholders locally and abroad, and development of the same for breadfruit slices and fries, and cocoa beans. • Ongoing research on orchid propagation.

• To undertake scientific and technical research with the primary aim of adding value to local resources and services.	• Ongoing research to develop a process for the purification of coconut oil as cooking oil. • Research to screen promising taro lines from cycle 8 (via sensory and nutritional evaluations) (PARDI) completed, and a report on project findings and recommendations disseminated to interested stakeholders locally and abroad. • Ongoing research to optimize a vanillin extraction process from dried vanilla pods. • Ongoing research to evaluate frozen breadfruit slices and chips pathways.
• To develop functional prototypes of products and processes based on scientific and technical research for the local or overseas markets.	• Ongoing research to develop a process to make a margarine product using avocado and coconut oil blends. • Research to identify potential locally available fruits as raw materials to develop a process for making fruit spirits. • Ongoing screening of plant and marine species for biomedical research towards remedy of diabetes and obesity.
• To establish partnership with the private sector and commercial interests to support the Organisation's activities.	• SROS membership and participation with the COC and SAME meetings, promoting SROS research and technical laboratory capabilities and engaging in product development forums. • One-on-one meetings held with potential business partners and/or up-takers of SROS technologies associated with SROS's avocado oil, gluten free breadfruit flour & biodiesel.
• To ensure effective training for researchers and technical research.	• Regular in-house training of SROS technical staff in chemical and microbiological tests, calibration methods, and research methods. • Overseas training of SROS research staff on research related skills and techniques. • Formal tertiary training of four SROS scientists in NZ (VUW) and one in Australia (UQ) to upgrade their qualification levels.
• To augment and effectively manage financial and human resources of the Organisation.	• Facilities and asset register are maintained, and necessary repairs completed according to set schedules. • Delayed completion of quarterly and annual reports. • Financial position updated for monthly review by the Management Committee. • Performance feedback to individual staff formally provided once a year via the staff performance appraisal process.

3.3 Overview of financial performance and financial results for the year

3.3.1 Financial – Key Performance Measures

The table 1 below shows the different revenue streams SROS implemented in this financial year in order to achieve its targeted Cost Recoveries of $139,033. It is also noted above that SROS has exceeded its collection for this financial year against its target by $72,167 or 52%, which is an improvement of 58% in collections when compared to $133,349 from the previous financial year. This is excluding SROS's ability to secure additional funding through research grant funding assistance.

Table 1: Revenue generated in this financial year compared to the last financial year.

Revenue Streamline	FY2014/2015		FY2013/2014	
	Amount	Cost Recoveries Target	Amount	Cost Recoveries Target
Technical Services	128,981	128,540	105,850	140,000
Biodiesel Sales	48,150	10,493	11,498	20,000
Sale of Breadfruit Flour	14,646	-	4,959	-
Consultancy Fees	11,280	-	8,345	-
Other Income	8,143	-	2,697	-
Total	**$211,200**	**$139,033**	**$133,349**	**$160,000**

3.3.2 Total Revenue

Total revenue received for the year was $3,648,511 of which $3,300,902 (90.5%) consists of Government Grant and remaining $347,609 (9.5%) from the different avenues listed below under Other Income and its comparison to the previous year as highlighted in table 2:

- $10,703 Turkey Grant – Bioethanol Project
- $6,199 IUCN Biodiesel Funds
- $31,172 Avocado Margarine Project
- $(1,244) Coconut Oil Refinement Project
- $128,981 Technical Services
- $17,547 Secretariat of the Pacific Community
- $48,150 Biodiesel Sale
- $12,640 PHAMA – Cocoa Fermentation Project
- $18,248 Republic of Korea Grant – Fruit Wine Project
- $17,450 Turkey Grant – Breadfruit Phylogenetics Project
- $21,686 PHAMA – Frozen Taro Project
- $11,280 Consultancy Fees
- $14,646 Breadfruit Flour Sales
- $2,009 Amortisation Income
- $8,143 Other Income

Table 2: Details of Other Income for this financial year compared to the last financial year.

	FY2014/2015 SAT$	FY2013/2014 SAT$
Turkey Grant - Ethanol Project	10,703	38,200
IUCN Biodiesel Funds	6,199	110,614
Avocado margarine	31,172	54,089
Coconut oil refinement	(1,244)	11,095
Technical Services	128,981	105,850
Secretariat of the Pacific Community	17,547	12,280
Sales Biodiesel	48,150	11,498
PHAMA Cocoa Fermentation Project	12,640	-
Republic of Korea funds - Fruit Wine	18,248	3,282
Turkey grant - Breadfruit project	17,450	94,177
PHAMA Frozen Taro Project	21,686	40,737
Consultany fees	11,280	8,345
Sales Breadfruit Flour - Gluten Free	14,646	4,959
Amortisation Income	2,009	-
Other income	8,143	66,855
TOTAL OTHER INCOME	**347,609**	**561,981**

It is also important to note the total grant funds remaining which are classified as "Deferred Income" under current liability in the Balance Sheet and also under Note 18 in the Notes to the Financial Statement for projects held by MOF, until such time these funds are fully utilized for research project purposes. We have also accounted for all the assets donated from Government which were used during the UNSIDS Conference in September 2014. These include:

- $95,585 SPC Soil Biodiversity & PARDI Projects
- $279,473 Coconut Oil Refinement Project
- $204,373 Avocado Margarine Project
- $478 PHAMA - Frozen Taro Project
- $3,360 PHAMA -Cocoa Fermentation Project
- $4,874 FAO Consultancy Funds
- $118,511 SIDS Assets donated to SROS
- **$706,654** **Total Deferred Income**

- $51,829 Turkey Grant – Bioethanol Project
- $23,283 IUCN Biodiesel Project – 2nd Phase
- $5,567 Turkey Grant - Breadfruit Project
- $285,396 Republic of Korea - Fruit Wine Project
- $237,875 Japanese Embassy – Sustainable Growth of Fragrant Plants for Poverty Reduction Project
- **$603,949** **Total Project Grants held by MOF**

As a public beneficiary body reliant on Government grant and funding from external donor agencies, SROS continues to strive to effectively manage its financial resources and strengthen its earning capacity.

3.3.3 Total Expenditure

The overall expenditure of $3,478,275 was incurred during this financial year which is within the budgeted forecast of $4,131,438 as summarized in table 3.

We note a positive variance due to controlled spending under Occupancy costs, Personnel costs and a substantial drop in Depreciation costs for the year. It is also important to note the high spending items compared to the budget forecast for the year as seen largely under Other costs of $255,958. This was mainly due to the increase in Gas utilization for testing services, Accreditation related costs, and maintenance related costs across the board.

Table 3: Total Expenditure for this financial year compared to the last financial year.

Expenditure Particulars	FY2014/2015			FY2013/2014		
	Actual	Budget	Variance	Actual	Budget	Variance
Audit fees	9,550	8,004	(1,546)	8,004	8,004	-
Directors fees & board expenses	40,456	15,600	(24,856)	50,765	55,600	4,835
Provision for Doubtful Debts	-	-	-	7,319	-	(7,319)
Depreciation	226,993	871,780	644,787	853,161	871,780	18,619
Personnel costs	1,742,435	1,950,047	207,612	1,559,289	1,747,231	187,942
Occupancy costs	255,282	350,000	94,718	158,821	210,016	51,195
Administrative costs	513,356	501,762	(11,594)	651,942	610,257	(41,685)
Other costs	690,203	434,245	(255,958)	660,031	1,269,612	609,581
	3,478,275	**4,131,438**	**653,162**	**3,949,332**	**4,772,500**	**823,168**

The above table also shows an overall reduction in total actual expenditure by $471,057 in this financial year compared to the last financial year, and this is mainly due to the substantial decrease in Depreciation ($626,168) and Administrative costs ($138,586), although there were increases in spending noted under Personnel ($183,146) and Occupancy Costs ($96,461).

3.3.4 Statement of Financial Position and Income and Expenditure Summary

Table 4 below provides a snap shot of SROS's Financial Position / Balance Sheet and its Statement of Income and Expenditure / Profit and Loss with detailed notes outlined in the audited financial statements section of this report.

We note in table 4 the surplus of $170,236 for this financial year which is an increase compared to the previous financial year's surplus of $45,233.

The table also portrays that SROS nearly achieved its target current ratio of 2:1 (current assets vs current liabilities) at the end of this financial year, which was maintained at 2.3:1, similar to the previous financial year's ratio. This is mainly due to a relatively same difference at the end of the two financial year periods between the Current Assets and Current Liabilities for the Organisation. Even though this positive ratio ensures SROS will meet its short term obligations/liabilities, we are still determined to continue to find alternative revenue streams to assist the Organisation's funds for its on-going activities.

Table 4: Statement of Financial Position and Statement of Income and Expenditure for this financial year compared to the last financial year.

	FY2014/2015		FY2013/2014	
PARTICULARS	**ACTUAL**	**BUDGET**	**ACTUAL**	**BUDGET**
Revenue	3,300,902	3,266,703	3,432,584	4,091,087
Other Income	347,609	139,033	561,981	238,103
Total Income	**3,648,511**	**3,405,736**	**3,994,565**	**4,329,190**
Expenditure	3,478,275	4,038,498	3,949,332	4,973,005
Net Profit	**170,236**	**(632,762)**	**45,233**	**(643,815)**
Current Assets				
Cash and cash equivalent	1,383,557	1,256,656	1,380,476	1,682,516
Other receivables and prepayments	368,651	80,072	299,873	355,877
Stock on hand	150,912	225,687	214,940	207,811
Total Current Assets	**1,903,120**	**1,562,415**	**1,895,289**	**2,246,203**
Non Current Assets	2,322,420	2,260,522	2,152,878	1,688,992
Total Assets	**4,225,540**	**3,822,937**	**4,048,167**	**3,935,195**
Current Liabilities				
Other payables and accruals	57,419	95,512	90,964	62,902
Allowance for staff benefits	57,771	71,896	68,472	66,541
Deferred income	706,654	784,904	655,271	1,072,649
Total Current Liabilities	**821,844**	**952,312**	**814,707**	**1,202,092**
Working capital	1,081,275	610,103	1,080,582	1,044,111
Current Ratio	2.3:1	1.6:1	2.3:1	1.9:1
No of employees	**52**		**51**	

3.4 Capital expenditure and projects for the financial year

Overall we note a decrease of about 5% in Capital investment for the Organisation in this financial year when compared to the previous financial year.

The major capital investment made in this financial year is under Building and Roads totaling $116,546; the bulk of this investment is the road resealing costs to the amount of $83,546 with the 10% retention fee to be settled in the next financial year. It also includes the installation of flex windows for the Chemistry and Analytical Laboratories to the amount of $33,000.

Table 5: Capital Expenditure during this financial year compared to the last financial year.

PARTICULARS	FY2014/2015	FY2013/2014	
	ACTUAL	ACTUAL	VARIANCE
Building & Roads	116,546	23,465	93,081
Furniture and Fittings	69,701	12,772	56,929
Laboratory Equipment	48,033	358,404	(310,371)
Office & Other Equipment	82,255	24,861	57,394
Motor Vehicles	80,000	-	80,000
			-
Total Capital Expenditure	**396,535**	**419,502**	**(22,967)**

Other major capital additions recorded under the different asset classifications are highlighted below:

Furniture and Fittings include Post UNSIDS assets to the value of $57,130 and materials for the SROS front fence $5,817.

Laboratory Equipment include the construction of the 5000 L Diesel Tank, $16,815; DA Meter for fruit ripeness testing, $9,792; Rotary evaporator for the fruit wine project, $5,890; and, Freezer for activities under the PHAMA project, $3,280.

Office and Other Equipment include Post UNSIDS assets to the value of $63,390; weed eaters for ground maintenance, $6,297; and; new sign board for SROS front entrance, $3,887.

For Motor Vehicles, it was the procurement of a $80,000 new right hand drive 15-seater Van for SROS daily operations.

3.5 Human Resource Development

Staff development activities undertaken in the financial year comprised of overseas and local workshops, courses and seminars attended by SROS staff. They include the following:

22nd – 25th July & 29th July – 1st August 2014: Mamea Samuel Ieremia, Manager AFD, attended the PSC/PICPA Public Policy Analysis Program at the Public Service Commission in collaboration with the Pacific Island Centre for Public Administration (PICPA), which focused on strengthening and developing Public Policy for government ministries and public bodies.

13th – 14th August 2014: Telesia Ah Sam, Senior Administration Officer AFD, attended the Awareness Workshop and Occupational Safety and Health (OSH) Regulations 2014 & OSH ACT 2002 which was coordinated by MCIL. The main purpose of the workshop was to familiarize, strengthen and promote amongst employers, organizations and business owners to be proactive in ensuring there is compliance in workplace safety and health in accordance with OSH Regulations 2014.

12th – 24th August 2014: Tuimaseve Kuinimeri Finau, Manager PFTD, attended the 29th International Horticultural Congress, and Pre-Congress Training, Brisbane, Australia.

15th – 17th September 2014: Lilo Samani Tupufia, Manager ERED, attended the Asia Pacific Clean Energy Summit and Expo, Honolulu, Hawaii, and presented a poster presentation on biofuel research conducted at SROS.

19th August – 17th September 2014: Annie Toailoa, Principal Research Officer PFTD, attended the training course on "Food Security – Postharvest, Processing and Quality Assurance of Selected Agro-Industrial Products" in Thailand, which was coordinated by Thailand International Development Cooperation Agency. The main training objectives were to (1) provide basic scientific knowledge of the principles and concepts of postharvest, food preservation processing, packaging, quality measurement and quality control; (2) enhance knowledge and understanding of how to select appropriate technology to maintain food security and upgrade human capacity in transferring technology to needed party; and, (3) promote collaboration, communication and foster a professional network amongst participants.

26th September 2014: Telesia Ah Sam, Senior Administration Officer AFD, Isamaeli Time, Senior Research Scientist ERED, and Semi Seruvakula, Senior Research Scientist IRD, attended the Public Service Symposium which was held at the TATTE Convention Centre. The theme for this Symposium was "Home Grown Solutions for National Needs". Some members of the public and CEOs were invited to share their thoughts and experiences of how their work impacts the lives of the general public and the development of Samoa's workforce.

29th September – 31st October 2014: Pousui Dr. Fiame Leo, Manager TSD, and Luanda Epa, Senior Research Officer TSD, attended the training on "Sampling & Drug Analysis" conducted by ESR, Auckland, New Zealand, to qualify them as authorized analysts for methamphetamine and its precursors.

9th – 29th October 2014: Oiner Leutu Moa, Research Scientist ERED, attended a Seminar on Renewable Energy, Environment and Hygiene Management of Latin America, Caribbean and South Pacific Regions held in Nanchin City, Jianxi Province, China.

13th – 14th October 2014: SROS CEO Tilafono David Hunter was invited to participate in the launching of the Pacific Soil Partnership, the regional node of the Global Soil Partnership (GSP) that was held in Suva, Fiji.

10th – 11th December 2014: SROS CEO Tilafono David Hunter was invited to participate in the first PACE-NET Plus (Pacific-Europe Network for Science Technology and Innovation) bi-regional dialogue platform, entitled: *Moving towards a policy dialogue in Science, Technology and Innovation (ST&I) – Science diplomacy to serve policy demands*. Strengthening this bi-regional dialogue in ST&I; a core component of PACE-NET Plus, is a key step towards achieving increased EU-Pacific collaboration to address the societal challenges, that was held in Auckand, New Zealand.

22nd January 2015: Lilo Samani Tupufia, Manager ERED, and Isamaeli Time, Principal Research Scientist ERED, participated in the MNRE Stakeholder Consultation Workshop to finalise the National Biodiversity Strategy Action Plan for Samoa.

29th – 30th January 2015: Fauono Sina Mualia, Business Development Specialist, attended the SQA Post School Education and Training (PSET) Annual Conference. The main purpose of the Conference was to strengthen the working relationship of the SQA and its stakeholders to enhance access to quality and relevant PSET.

5th February 2015: All SROS scientists and Management attended a presentation on-site by Dr. Jared Williams (Fulbright Soil Scientist) coordinated by the US Embassy Samoa Office on sustainable agricultural practices using organic interventions, as part of the Commemoration of the International Year of Soils in Samoa.

11th – 13th February 2015: Isamaeli Time, Principal Research Scientist ERED, Julian Wong Soon, Senior Research Scientist ERED, and Oiner Leutu Moa, Research Scientist ERED, attended the training on Environment Impact Assessment (EIA) coordinated by SPREP.

11th February 2015: Fauono Sina Mualia, Business Development Specialist, and Mamea Samuel Ieremia, Manager AFD, attended the workshop on Value Chain Analysis coordinated by MCIL under a Trade, Commerce and Manufacturing Sector Plan project.

18th February 2015: Fauono Sina Mualia, Business Development Specialist, and Gaufa Salesa-Fetu, Manager IRD, attended the National Stakeholders Consultation on Agriculture Survey 2015 coordinated by SBS.

18th February 2015: All SROS scientists and Management attended a presentation on-site by Professor Steven Underhill from the University of Sunshine Coast, Australia, on devices/methods that can used for the analysis of postharvest losses of important vegetable crops in Samoa.

17th March 2015: Lilo Samani Tupufia, Manager ERED, and Isamaeli Time, Principal Research Scientist ERED, attended the Consultation Workshop on Development of Project Design Document (PDD) for Energy Bill and Development and Implementation of Sustainable Bioenergy in Samoa coordinated by MOF.

16th – 18th March 2015: SROS CEO Tilafono David Hunter attended the UN-funded meeting on the SAMOA Pathway and the Science-Policy Interface in Small Island Developing States (SIDS) that was held in Saint Lucia, Caribbean. The purpose of the meeting was to seek pathways that Science is currently influencing Policy in SIDS and approaches that could be taken to strengthen this influence.

19th March 2015: Lilo Samani Tupufia, Manager ERED, attended the Inception Workshop for Implementing GEF/UNDP/GoS SMSMCL Project on Strengthening Multi-Sectoral Management of Critical Landscapes in Samoa coordinated by MNRE.

23rd – 25th March 2015: Sulamanaia Montini Ott, Board member, SROS, Tilafono David Hunter, CEO SROS, Fauono Sina Mualia, Business Development Specialist, Tuimaseve Kuinimeri Asora-Finau, Manager PFTD, and Siope Pele, Senior Research Scientist PFTD, participated in the SAME "Buy Samoa made products" Trade Show held in Liverpool, Sydney, Australia. SROS participation was to promote investment profiles on completed product development projects (gluten-free breadfruit flour and avocado oil), and assist with the sensory evaluation of frozen taro products exhibited by Farmer Joe and Samoa Agro-marketing.

15th – 17th April 2015: Pousui Dr. Fiame Leo, Manager TSD, and Mamea Samuel Ieremia, Manager AFD, represented SROS in the "2 Samoas Trade Fair" held in American Samoa. The event presented SROS with a good opportunity to promote and showcase our technical services including our narcotics laboratory capabilities.

23rd – 24th June 2015: SROS CEO Tilafono David Hunter attended the 2nd bi-regional dialogue platform organized by PACE-NET Plus that was held in Brussels, Belgium. The platform gathered some 80

delegates from Europe and the South Pacific, all senior scientists and decision-makers involved in Research in Science, Technology and Innovation (STI). Participants actively discussed policy recommendations elaborated in the framework of the project, the aims of which are to strengthen cooperation between Europe and the South Pacific, and to increase the visibility of areas of research in STI in need of support, within the political institutions of the South Pacific. To sustain this bi-regional dialogue, the project also aims to increase the understanding within Europe of the potential and perspective of the South Pacific nations.

23rd – 26th June 2015: Moon Chan, Research Scientist TSD, and Fa'ataga Junior Fa'ataga, Professional Officer TSD, attended the NZQC-coordinated Microbiology Laboratory Quality Assurance Workshop held in Auckland, New Zealand. The main purpose of workshop was to learn how to apply the principles of good practice in microbiological testing laboratories to ensure the quality of testing according to the ISO 17025 standard. The training was specifically designed for meat, dairy, food and water microbiology laboratories which suits both participants' work related responsibilities in TSD.

29th – 30th June 2015: Tuimaseve Kuinimeri Finau, Manager PFTD, attended the PARDI end of programme workshop that was held in Suva, Fiji. The results and findings of the project component undertaken by SROS namely the screening of new taro lines from Cycle 8 from SPC and USP breeding efforts were presented at the workshop.

3.6 Staff Movements during this Financial Year

3.6.1 Departures

Gutu Tagiilima was hired as a cleaner on 7th March 2013. She resigned from SROS on 11th July 2014 to move to New Zealand for greener pastures.

Kilom Ishiguro was hired as Senior Research Scientist ERED on 29th July 2013. He resigned from SROS on 1st August 2014 for a new role at SPREP to further his knowledge and work experience.

Tiafau Anesone was hired as a Driver on 14th June 2014 and resigned from SROS on 5th September 2014 to return for good to Australia to support his family.

Dr. Kenneth Wong, VSA Volunteer, completed his two and half years' assignment with SROS as a Scientific Advisor. Dr. Wong has been an invaluable contribution to SROS in so many facets of its work. He was also part of the SROS Management team and was highly respected because of his technical knowledge as a scientist (as is his background) but also knowledgeable in the commerce field recommending viable and feasible projects for SROS to pursue, and many others. He departed on 13th November 2014.

Vanda Faasoa Chan Ting was hired as a Research Scientist ERED in 2012 and later promoted to Principal Research Scientist ERED in 2013 until she resigned on the 14th November 2014 to take up another challenge at MNRE as ACEO Renewable Energy Division.

Gaufa Salesa-Fetu resigned from her duties on 12th June 2015, as Manager IRD after serving SROS for seven years, to take up her new challenge at Paradise Beverages. She has contributed tremendously in various projects and SROS greatly appreciates and acknowledges the valuable contributions she has rendered over the years and we wish her all the best in her future endeavors.

3.6.2 Appointments

Mene Niko was appointed to the position of Casual worker on 2nd July 2014 replacing Sosaiete Fa'atuiese. He has vast experience in ground and field work, cleaning as well as a hard worker.

Luanda Epa has been promoted to Senior Research Scientist TSD, she is a very passionate and dedicated employee. She commenced work in her new position on 15th July 2014.

Moon Chan was promoted to the Research Scientist Position TSD in July 2014 and later on as Senior Research Scientist TSD. She commenced work in her new position on 5th June 2015.

Randy Foroti Fanolua was appointed as a Research Scientist TSD on 10th June 2015. Randy holds a Bachelor of Science in Biochemistry from the University of Otago in New Zealand and SROS is his first choice of employment.

Julian Wong Soon was promoted to the Senior Research Scientist ERED in February 2015 and was later on appointed as the suitable candidate for the position of Principal Research Scientist ERED on 12th June 2015.

Fiti Laupu'a commenced his duties as a Professional Officer ERED on 22nd June 2015. Fiti is a graduate from the National University of Samoa attaining a Bachelor of Science degree in 2014, and he is currently doing part-time study for Postgraduate Diploma in Science at the National University of Samoa.

3.7 Outlook for next year

SROS is committed to continue engaging the private sector via participation in SAME and SCCI monthly meetings, and potential local and foreign investors and donors to commercialize SROS scientifically tested product prototypes such as its gluten-free breadfruit flour, avocado oil and frozen taro technologies, as well as future product developments like refined coconut oil, avocado margarine, frozen breadfruit and breadfruit chips technologies, vanillin and essential oil extraction processes and fruit spirit making. As part of this commitment, SROS endeavors to commercialize at least one of the above-mentioned products on its own or via a public-private partnership (PPP) agreement desirably by the end of the fourth quarter of FY2015/16.

The ongoing strengthening of SROS's technical service capabilities will build up SROS's accredited and non-accredited testing capacities including narcotics (*Cannabis sativa L.* and methamphetamine analysis) to cater for Samoa's drug related court cases' needs.

Continued work in progress of research projects mentioned in earlier sections of this report to be completed within agreed timeframes, as mentioned in the SROS Corporate Plan 2014-2017, and progress to commercialization stages. In summary, the outlook for SROS for the next financial year will continue to be demanding and challenging.

3.8 Future risks and uncertainties

Funding sustainability and commercialization of developed products and technologies continue to be ongoing challenges for SROS given its dependence on Government and external funding for its operations and research mandate. With increasing competing funding requests made to Government and with the Government's strategy to reduce the national debt by promoting self-sustainability of SOEs and tightening annual budget provisions, the challenges for SROS are to:

- continue to strengthen its earning capacity via increased engagement in commercial activities/opportunities to achieve its mandated objectives;
- continue to scope long term research and business investment partners to pursue meaningful research activities that are industry driven and will benefit partners and the Samoan economy as a whole; and,
- develop Intellectual Property (IP) ownership to SROS scientific research outcomes which could potentially lead to an outright sale of the research results and/or some form of commercial partnership with another party to achieve financial gain.

To address the above-mentioned challenges, SROS intends to establish and operate a commercial arm to commercialize its scientific research outcomes (products and processes) for trading purposes either on its own or via a PPP agreement arrangements with interested business entity(ies). This proposal may require some amendments to the SROS Act 2008 and is planned to be completed by the end of the next financial year for Cabinet and subsequent Parliament endorsement considerations.

SROS's evolving and expanding scientific research mandate also puts pressure on available resources (human, financial & infrastructure) to successfully deliver expected outcomes within specific timeframes. Having said this, SROS is committed to effectively and efficiently utilize its limited resources to achieve the best possible outcomes.

3.9 CSO implementation (where applicable)

Not applicable to SROS in this financial year.

I wish to express on behalf of Management and Staff, my most sincere appreciation to the former Minister responsible for SROS, Honourable Fa'amoetauloa Lealaiauloto Taito Nanai Dr. Fa'ale Tumaali'i, Chairman of the SROS Board of Directors, Fonoti Perelini Perelini, and all Board Directors, for their continued support and valuable guidance during this challenging year. I also gratefully acknowledge our Government and Development Partners for their continued financial investments in SROS's research mandate and activities. Last but not least, I thank the Management and Staff of SROS for their diligent work which has contributed positively to SROS's research and development efforts in this financial year.

Ma le fa'aaloalo lava

Tilafono Leatiogie David J. Hunter
Chief Executive Officer
Scientific Research Organisation of Samoa

4. Auditor's Opinion

TELEPHONE: 27751
FAX: 24167
EMAIL: info@audit.gov.ws
Website: www.audit.gov.ws

Please address all correspondences to the Controller & Auditor-General

P.O. Box 13
APIA, SAMOA

AUDIT OFFICE

SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

We have audited the accompanying Financial Report of the Scientific Research Organisation of Samoa which comprises the Statement of Financial Position as at 30 June 2015 and the Statements of Financial Performance, Cash Flows and Changes in Equity for the year then ended, a summary of significant accounting policies and other explanatory notes. The Accounting Firm of Betham & Co, Chartered Accountants and Business Advisors, assisted in this audit.

Responsibility for the Financial Report

The Board of Directors is responsible for the preparation and fair presentation of the Financial Report in accordance with International Financial Reporting Standards. This responsibility includes establishing and maintaining internal control relevant to the preparation and fair presentation of the Financial Report that is free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

Our responsibility is to express an opinion on the Financial Report based on our audit. We conducted our audit in accordance with International Standards on Auditing. These Auditing Standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the Financial Report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the Financial Report. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the Financial Report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the Financial Report 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 entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Board of Directors, as well as evaluating the overall presentation of the Financial Report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Unqualified Audit Opinion

In our opinion, the Financial Report of the Scientific Research Organisation of Samoa is in accordance with the Research and Development Institute of Samoa (RDIS) Act 2006 and amendments, including:

1. Giving a true and fair view of the financial position of the Scientific Research Organisation of Samoa as at 30 June 2015, and of its financial performance and cash flows for the year then ended; and

2. Complying with International Financial Reporting Standards.

Apia, Samoa
30 October 2015

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

5. Audited Financial Statements 2014 – 2015 Financial Year

DIRECTOR'S REPORT

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
DIRECTOR'S REPORT
FOR THE YEAR ENDED 30 JUNE 2015

The Directors present their report together with the financial statements of the Scientific Research Organisation of Samoa for the year ended 30 June 2015 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:

• Fonoti Perelini S. Perelini	Chairman
• Dr. Satupaitea Viali	Director
• Lalauena Palagi Fetalaiga Fuimaono	Director
• Manuleleua Dr. Sonny Lameta	Director
• Sulamanaia Nuuetolu Montini Ott	Director
• Dr. Taema Imo	Director
• Suluimalo Amataga Penaia	Director
• Tilafono David Hunter	Ex-Officio/CEO

The board members' appointments were formalised on the 1st April 2012 for a term of three (3) years.

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 2015.

(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 2015.

Operating Results

The net surplus for the year is **$ 170,236** (2014: Net Surplus **$ 45,233**)

Dated at _____ this _____ day of _____ , 2015.

Signature
Fonoti Perelini S. Perelini
Chairman

Apia, Samoa
30 / 10 / 15

Signature
Sulamanaia Nuuetolu Monitini Ott
Director

Apia, Samoa
30 / 10 / 2015

MANAGEMENT'S REPORT

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
MANAGEMENT'S REPORT
FOR THE YEAR ENDED 30 JUNE 2015

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

Signature
Tilafono David Hunter
Chief Executive Officer

Apia, Samoa

Dated: 30/10/ , 2015.

Signature
Mamea Samuel Ieremia
Manager Administration & Finance

Apia, Samoa

Dated: 30/10/ , 2015.

STATEMENT OF FINANCIAL POSITION

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2015

		2015	2014
ACCUMULATED FUNDS	**Notes**	**SAT$**	**SAT$**
Opening balance		3,233,460	3,188,227
Add: Surplus		170,236	45,233
Closing balance		**3,403,696**	**3,233,460**
Represented by:			
Current assets			
Cash and cash equivalent	**3**	1,383,557	1,380,476
Other receivables and prepayments	**4**	368,651	299,873
Stock on hand	**5**	150,912	214,940
Total current assets		1,903,120	1,895,289
Current liabilities			
Other payables and accruals	**6**	57,419	90,964
Allowance for staff benefits	**7**	57,771	68,472
Deferred income	**9**	706,654	655,271
Total current liabilities		821,844	814,707
Working capital		1,081,276	1,080,582
Non Current assets			
Property, plant and equipment	**10**	2,322,420	2,152,878
Net assets		**3,403,696**	**3,233,460**

The accompanying notes form an intergral 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 2015

		2015	2014
INCOME	**Notes**	**SAT$**	**SAT$**
Grants from Government of Samoa	**8**	3,300,902	3,432,584
Other income	**12**	347,609	561,981
Total income		**3,648,511**	**3,994,565**
EXPENDITURES			
Audit fees - current		9,550	8,004
Directors fees & board expenses		40,456	50,765
Provision for Bad Debts		-	7,319
Depreciation	**10**	226,993	853,161
Personnel costs	**13**	1,742,435	1,559,289
Occupancy costs	**14**	255,282	158,821
Administrative costs	**15**	513,356	651,942
Other costs	**16**	690,203	660,031
Total expenditures		**3,478,275**	**3,949,332**
Net Surplus		**170,236**	**45,233**

The accompanying notes form an intergral 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 2015

	Accumulated Fund SAT$	Total SAT$
2014		
Balance as at 1 July 2013	3,188,227	3,188,227
Add: Surplus	45,233	**45,233**
Balance as at 30 June 2014	**3,233,460**	**3,233,460**
2015		
Balance as at 1 July 2014	3,233,460	3,233,460
Add: Surplus	170,236	**170,236**
Balance as at 30 June 2015	**3,403,696**	**3,403,696**

The accompanying notes form an intergral 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 2015

	Notes	2015 SAT$	2014 SAT$
Cash flows from/(to) operating activities			
Cash received from Government of Samoa		3,031,445	3,256,626
Cash received from the Republic of Turkey (Ethanol)		10,703	100,732
Cash received from IUCN		64,158	9,409
Cash Received from Republic of Korea (Fruit Wine)		18,319	3,282
Cash received from the Republic of Turkey (Breadfruit)		17,450	94,177
Cash received from - Coconut oil refinement fund		-	1,390
- Technical services		128,981	93,612
- Biodiesel sales		48,150	10,816
- Sales Breadfruit Flour - Gluten Free		1,475	-
- PHAMA		21,786	40,736
- Consultancy services		9,000	8,345
- Other income		8,660	2,697
Cash paid for expenses		(2,960,510)	(2,944,180)
Net cash flow by operating activities		**399,616**	**677,641**
Cash flows from/(to) investing activities			
Purchase of property, plant and equipment	**10**	(396,535)	(419,501)
Net cash used by investing activities		**(396,535)**	**(419,501)**
Net increase/(decrease) in cash		3,081	258,140
Cash and cash equivalent at the beginning		1,380,476	1,122,337
Cash and cash equivalent at the end	**3**	**1,383,557**	**1,380,476**

The accompanying notes form an intergral 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 2015

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 ammendment 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.

2. ACCOUNTING POLICIES (Con't)

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.

h) Deferred Income

Deferred Income represent grants received from Republic of Turkey and the International Union for Conservation of Nature (IUCN) for Ethanol and Biodiesel research respectively which commenced on 2008/2009 financial year and are expected to be completed by December 2015.

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.

2. ACCOUNTING POLICIES (Con't)

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		**2015**	**2014**
		SAT$	**SAT$**
Petty cash		500	500
Cash at ANZ Bank (Samoa) Limited - main account		332,035	433,853
Cash at Westpac Bank Ltd - Technical Services		229,973	106,447
ANZ Bank (Samoa) Limited: project account	- US Embassy Aid	-	(518)
	- Secretariat of the Pacific Community	95,585	113,131
	- Coconut Oil Refinement Fund	279,473	278,229
	- Avocado Margarine Fund	204,373	235,545
	- Others	241,618	213,289
		1,383,557	**1,380,476**

4. OTHER RECEIVABLES & PREPAYMENTS		
Prepaid insurance and other prepayments	31,146	23,330
Debtors	337,505	283,862
Less: Provision for Doubtful Debts	-	(7,319)
	368,651	**299,873**

5. STOCK ON HAND		
Lab consumables on hand	150,912	214,940
	150,912	**214,940**

6. OTHER PAYABLES & ACCRUALS		
Trade payables	6,263	23,117
Accrued expenses	27,512	36,799
Audit fees	8,004	8,004
Electricity	15,595	22,999
Land lease	45	45
	57,419	**90,964**

7. ALLOWANCE FOR STAFF BENEFITS		
Staff annual leave entitlements	57,771	68,472
Total allowance for staff benefits	**57,771**	**68,472**
Movement for Allowance of Staff Benefits		
Balance at beginning of the year	68,472	63,041
Additional allowance during the year	23,228	10,897
Utilised during the year	(33,929)	(5,466)
Balance at year end	**57,771**	**68,472**

	2015 SAT$	2014 SAT$
8. GRANTS FROM GOVERNMENT OF SAMOA		
Cash received from Ministry of Finance	**3,300,902**	**3,432,584**

9. DEFERRED INCOME

Donors	Opening Balance (2014)	Additional Funding	Costs Incurred	Ending Balance (2015)
US Aid	(518)	-	(518)	-
Secretariat of the Pacific Community	113,131	-	17,547	95,585
Coconut Oil Refinement	278,229	-	(1,244)	279,473
Avocado Margarine	235,545	-	31,172	204,373
Gluten Free Breadfruit Flour	13,171	-	13,171	-
PHAMA - Frozen Taro Project	15,713	-	15,235	478
PHAMA - Cocoa Fermentation Project	-	16,000	12,640	3,360
FAO Consultancy Fund	-	7,154	2,280	4,874
SIDS Donated Assets	-	118,511	-	118,511
Total Deferred Income	**655,271**	**141,665**	**90,282**	**706,654**

10. PROPERTY, PLANT & EQUIPMENT

Cost	Buildings & Roads SAT$	Furniture & Fittings SAT$	Laboratory Equipment SAT$	Office Equipment SAT$	Motor vehicles SAT$	TOTAL SAT$
1 July 2014	2,304,515	230,430	3,615,166	1,331,806	292,483	7,774,400
Additions	116,546	69,701	48,033	86,700	80,000	400,980
Disposals	-	-	-	(4,445)	-	(4,445)
At 30 June 2015	2,421,061	300,131	3,663,199	1,414,061	372,483	8,170,935
Accumulated depreciation						
1 July 2014	531,466	218,773	3,269,670	1,309,130	292,483	5,621,522
Depreciation	129,287	5,564	85,794	6,348	-	226,993
Disposals	-	-	-	-	-	-
At 30 June 2015	660,753	224,337	3,355,464	1,315,478	292,483	5,848,515
Carrying amount						
30 June 2014	**1,773,050**	**11,657**	**345,495**	**22,676**	**-**	**2,152,878**
30 June 2015	**1,760,308**	**75,794**	**307,735**	**98,583**	**80,000**	**2,322,420**

11. 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.

	2015 SAT$
Costs of Donated Assets	
SIDS Assets funded by the Government of Samoa	120,520
Total cost of assets	120,520
Accumulated Amortisation	
Opening accumulated amortisation	-
Amortisation for current year	2,009
Closing accumlated amortisation	2,009
Unamortised Amount	**118,511**
Current portion of amortisation	2,009
Non - current portion of amortisation	116,502
Unamortise amount	**118,511**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2015

	2015	2014
12. OTHER INCOME	**SAT$**	**SAT$**
Turkey Grant - Ethanol Project	10,703	38,200
IUCN Biodiesel Funds	6,199	110,614
Avocado margarine	31,172	54,089
Coconut oil refinement	(1,244)	11,095
Technical Services	128,981	105,850
Secretariat of the Pacific Community	17,547	12,280
Sales Biodiesel	48,150	11,498
PHAMA Cocoa Fermentation Project	12,640	-
Republic of Korea funds - Fruit Wine	18,248	3,282
Turkey grant - Breadfruit project	17,450	94,177
PHAMA Frozen Taro Project	21,686	40,737
Consultany fees	11,280	8,345
Sales Breadfruit Flour - Gluten Free	14,646	4,959
Amortisation Income	2,009	-
Other income	8,143	66,855
	347,609	**561,981**
13. PERSONNEL COSTS		
Salaries and wages	1,643,040	1,469,908
NPF 5% contributions	79,273	75,364
ACC 1% contributions	17,073	14,017
Higher Duty Allowances	3,049	-
	1,742,435	**1,559,289**
14. OCCUPANCY COSTS		
Electricity	255,267	158,806
Land lease	15	15
	255,282	**158,821**
15. ADMINISTRATIVE COSTS		
Advertising and promotions	23,389	49,901
Accounting fees - current year	-	2,875
Bank charges	1,007	2,457
Internet charges	26,454	55,481
Fees, License and registrations	4,088	400
Car rental	8,478	2,550
Fuel and oil	74,303	58,455
Printing and stationery	73,856	82,023
Repairs and maintenance - motor vehicles	20,151	36,228
Repairs and maintenance - building	4,179	17,679
Repairs and maintenance - office equipment	10,288	13,583
Repairs and maintenance - plant & equipments	16,889	27,710
Repairs and maintenance - furniture and fittings	4,354	3,527
Subscriptions	500	1,030
Telephone, fax and postages	20,178	24,553
Travel and accomodation	80,674	86,922
Water supplies	4,628	9,208
Insurance	84,166	69,798
Local travel	622	1,025
Consultancy fees	6,687	67,112
General expenses	48,465	39,425
	513,356	**651,942**

	2015	2014
16. OTHER COSTS	**SAT$**	**SAT$**
Lab consumables	153,228	223,360
Freight and handling costs	26,770	27,079
Accreditation project costs	84,568	47,128
Soil bio Project costs	1,428	4,423
Avocado margarine costs	15,268	18,227
Jatropha Project costs	6,199	61,521
Biodiesel Project costs	7,836	68,724
Fruit Wine Project costs	21,048	-
Cocoa Fermentation Project costs	12,596	-
Other projects costs	61,909	21,983
Plant hire	2,830	3,236
Interviewing panel allowances	-	4,633
Gas	148,044	94,940
Clothing allowance	5,800	5,608
Cleaning expenses	16,910	25,521
Staff training	31,206	29,301
Telephone allowances	3,600	3,600
Professional services	23,684	-
Awareness expenses	50,420	-
CEO & office catering	16,859	20,748
	690,203	**660,031**

17. RELATED PARTY DISCLOSURES

i.	Salaries and short-term employee benefits	712,491	643,798
	Balance represents remuneration of key member of management during the year.		
ii.	Board expenses	6,668	3,760
	Balance represents board expenses for meetings held throughout the year.		
iii.	Directors' fees	22,100	28,900
iv.	Board of directors allowances	11,688	18,105

The above amount consist of sitting allowance & annual Directors fees paid to eligible Directors who include; Dr. Satupaitea Viali, Dr. Sonny Manuleleua Lameta, Lalauena Palagi Fetalaiga Taulealo and Sulamanaia Nuuetolu Montini Ott.
Other Directors, who are public servants, were not paid sitting allowance & annual Directors fees.

18. PROJECT GRANTS

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 30/06/2014	Funds received	Funds expended	Balance as at 30/06/2015
Turkey Grant (Ethanol Project)	62,532	-	10,703	51,829
IUCN Biodiesel Funds - MNRE	107,147	-	83,864	23,283
Turkey Funds - Breadfruit Project	23,016	-	17,450	5,567
Republic of Korea - Fruit Wine Project	308,165	-	22,769	285,396
Japanese Embassy - Sustainable Growth of Fragrant Plants for Poverty Reduction Project	-	237,875	-	237,875
Total Project Grants held at MOF	**500,860**	**237,875**	**134,786**	**603,949**

i. 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: Purpose: To determine the optimum conditions and characteristics of the alkali process for biodiesel production using *Jatropha* oil as a feedstock.

18. PROJECT GRANTS (Con't)

iii. 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. 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.

v. **New Project received in May 2015, within this Financial Year 2014/2015:**
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.

19. CAPITAL COMMITMENTS

The Ministry of Finance has approved a budget of SAT$3.27 million (2013: SAT$3.41 million) for the period ended 30 June 2015. Capital costs included in this Budget was $105,241 for the Road Re-Sealing at Nafanua.(2014: $150,000)

20. CONTINGENT LIABILITIES

The directors are not aware of any contingent liabilities for the period ended 30 June 2015. (2014: SAT$nil).

21. EVENTS OCURRING AFTER BALANCE SHEET DATE

There are no events subsequent to balance date which require recognition or disclosure in this financial statement. (2014: NIL).

22 APPROVAL OF FINANCIAL STATEMENTS

The board of directors approved the financial statements of the Organisation on **..30.. / ..10.. / ..2015..**

6. Annex (Analysis of Financial Performance Measures)

Table of Key Performance Measures

Performance Measures	This Year Actual 2014-2015	Last Year Actual 2013-2014	Plan This Year 2015-2016	Comments
Revenue	3,300,902	3,432,584	3,334,495	Although we note a decrease in Revenue or Government Grant due to a one off capital item procured in the previous year (GC/MS analytical machine) and slight reductions in operational costs, there is an increase however in funding for Personnel costs and also funding for the road re-sealing at SROS compound, Nafanua.
Other Income	347,609	561,981	148,988 (cost recoveries target)	We note the decrease of 38% in the overall Other Income mainly due to the low utilization of project funds during the year, however there is an increase in revenue received via our Commercial Technical Services Division of $128,981 compared to $105,850 in the previous year.
Total Revenue	$3,648,511	$3,994,565	$3,483,483	
Expenditure (Personnel, operating & depreciation)	3,478,275	3,949,332	3,658,330	The utilization for this financial year is 12% lower than the previous year due to a decrease mainly under depreciation costs.
Surplus/(Deficit)	170,236	45,233	(174,847)	The surplus achieved in this FY2014/2015 is due to SROS's stringent controls put in place on spending as well as its endeavor to seek funding from overseas to conduct its research and development functions to assist with Government Grants each year.
Current Assets	1,903,120	1,895,289	2,121,969	Increase in current assets is mainly due to the increase in accounts receivables owing and other prepayments.
Total Assets	$4,225,540	$4,048,167	$2,987,403	
Current Liabilities	821,844	814,707	1,095,209	The slight increase in Current Liabilities is due to the increase in deferred income mainly from UNSIDS donated assets and additional funds from the PHAMA project and Consultancy funds.