ANNUAL REPORT
2013 - 2014

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

SROS

Please address all correspondence to:

The Minister of Natural Resources

and Environment

Postal Address: Private Bag
Apia, Samoa
Telephone: (685) 20410
Facsimile: (685) 20884

Government of Samoa

OFFICE OF THE MINISTER OF NATURAL RESOURCES AND ENVIRONMENT

(Ministry of Natural Resources and Environment; National Parks, Recreation and Water Conservation; Samoa Trust Estates Corporation; National Disaster Management; Meteorology and Forestry; Planning and Urban Management Agency; Scientific Research Organisation of Samoa)

24 March 2015

Honorable Speaker of the House
Legislative Assembly
MULINU'U

In accordance with the Scientific Research Organisation of Samoa's Acts 2006 and 2008, I am pleased to submit herein the Annual Report of the Scientific Research Organisation of Samoa (SROS) for the year ended 30 June 2014.

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,

Hon. Fa'amoetauloa Lealai'auloto Taito Nanai Dr. Fa'ale Tumaali'i
MINISTER
SCIENTIFIC RESEARCH ORGANISATION OF SAMOA

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Statement to Parliament

1.1 Introduction

This is the eighth 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 Act 1972, 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 July 2013-June 2014 in which its operational activities were financed under an approved budget of $3,266,703. 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.

Message from the Chairman

On behalf of the Minister responsible for SROS, Honourable Fa'amoetauloa Lealaiauloto Taito Nanai Dr. Fa'ale Tumaali'i, SROS Board of Directors, Management and staff, I wish to present SROS's eighth Annual Report and associated accounts for Financial Year July 2013-June 2014. The SROS continues to make considerable progress in its mandated activities in this financial year, and will endeavour to continue with the positive progress in the next financial year.

Against its Corporate Plan 2012-2014, SROS has accomplished a great number of its desired outputs and continues to engage ministries, regional organizations, private sector and commercial interests to support the Organisation's activities. These partnerships aim to work closely with key stakeholders to undertake scientific research and development to contribute towards the enhancement of Samoa's national economy as well as the welfare of our people.

On the financial side of things, SROS continues to rely on Government subsidy via annual budget appropriations which has funded over 90% of personnel and operating expenses annually since its inception. In the long term, SROS plans to work towards reducing Government subsidy and increasing its own revenue generation from technical and consultancy services via its newly established Commercial Technical Services Division. In terms of funding for its on-going and proposed technological research projects, SROS continues to face challenges in securing external funding given increasing competing requests from other Government agencies to our Development Partners. The Board and Management continue to aggressively solicit and negotiate external research funding support and local business partnerships, to reduce SROS's reliance on Government grant.

In closing, I would like to acknowledge with much gratitude the Minister responsible for SROS, Honourable Fa'amoetauloa Lealaiauloto Taito Nanai Dr. Fa'ale Tumaali'i, for his regular wise counsels rendered to the Board and Management, to ensure smooth running of SROS to achieve its desired research outcomes as per its mandate. 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 unfailing commitment throughout the year and making positive progress to the Organisation's 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 continued support and persistence in steering SROS as Samoa's flagship in research and development, so that it will generate noteworthy innovative initiatives for the betterment of our people.

Soifua

Fonoti A. Perelini S. Perelini
TA'ITA'IFONO
KOMITI FA'ATONU
FA'ALAPOTOPOTOGA O SU'ESU'EGA FA'ASAIENISI A SAMOA

Message from the Chief Executive Officer

The Financial Year July 2013–June 2014 was another challenging year for SROS as it continues to play a significant part in contributing towards achieving Samoa's strategic development goals, via the undertaking of 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, collaborative partnerships and relationship building as detailed in the chapters to follow.

SROS continues to progress with the translation of scientific research developments into commercially viable ventures 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.

As another year ends, we acknowledge everyone who has contributed immensely towards SROS's achievements and challenge ourselves to continue to accomplish great things for the economic betterment of our country and enhancement of our people's welfare through scientific research and development in the new financial year.

I wish to express on behalf of Management and Staff, my most sincere appreciation to the Minister responsible for SROS, Honou'rable Faamoetauloa 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 faaaloalo tele lava

Tilafono Leatiogie David J. Hunter
OFISA SILI O PULEGA
FA'ALAPOTOPOTOGA O SU'ESU'EGA FA'ASAIENISI A SAMOA

Highlights for this financial year

This Annual Report covers the Financial Year July 2013–June 2014. Our Government's commitment to realize SROS's mission of research and development in value added goods and services for domestic and export markets and in renewable energy resources to reduce fuel imports and greenhouse gas emissions, was again evident in the approval of the requested budget of $3.27 million for this financial 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.

The following paragraphs summarize the Organisation's key achievements as outlined in its 2012–2014 Corporate Plan for this financial year.

SROS continued to enhance national and international awareness of its existence, research capabilities and research programmes via the following activities:

- SROS participation at the SAME Trade Show held in Auckland, New Zealand. The theme of the Trade Show was to promote "Buy Samoa Made" Goods and Services and promote Samoa's latest Exports in New Zealand. SROS showcased prototype samples of its gluten free breadfruit flour at the Trade Show.
- SROS input towards two international publications:
  - Woo, C., S. Kook, P. Rogers and S. Tupufia (2013) Utilisation of coconut oil-based 10% biodiesel to improve performance of an automotive-size common-rail diesel engine. Proceedings of the Australian Combustion Symposium November 6-8, 2013, The University of Western Australia. 4 pp.
  - Fiame, L., K.Y. Wong and S.J. Tauati (2014) Risks to soil biodiversity on the islands of the South Pacific. PACIFIC CONSERVATION BIOLOGY Vol. 20, Surrey Beatty & Sons, Sydney. 15 pp.
- SROS establishes a new Commercial Technical Services Division to provide the needed technical analyses efficiently and effectively, to support the private sector and exporters in their efforts to expand primary food production, manufacturing/processing and the service industries.
- SROS establishes a Narcotics Laboratory to provide testing of drugs for evidence to be used in court prosecutions under the Narcotics Act 1967. The laboratory has started with the testing of *Cannabis sativa L.* (marijuana), and plans to develop testing for other forms of Narcotics (e.g., methamphetamine or ice) to cater for developments in Narcotic legislations.
- Regular update of SROS's website www.sros.org.ws.
- Distribution and sharing of official corporate documents such as its corporate plan, annual reports, research proposals, etc to key stakeholders and visitors to SROS.

SROS maintained existing and established new partnerships with the private sector and commercial interests to support its activities. These partnerships included:

- Partnership with SPREP, MNRE and STEC to continue promoting the use of SROS's B10 biodiesel as an alternative environmentally clean fuel for some of their vehicle fleet at an agreed price.
- SROS membership in Samoa Chamber of Commerce (SCOC) and Samoa Association of Manufacturers and Exporters (SAME) and participation in their meetings and activities, with the

aim to work in partnership and develop prototypes as well as add value to local resources and services through scientific research and development to enhance Samoa's national economy.

- Approval of a USD$7M soft loan from IRENA/ADFD for the joint SROS/STEC/MNRE project to commercialize and co-implement biodiesel production and biomass gasification via a public-private partnership for electricity generation.
- One-on-one meetings held with potential business partners and/or up takers of SROS know-how on processing avocado oil, gluten free breadfruit flour and biodiesel.

SROS continued to strengthen collaborative links at national and international levels in order to enhance its research outputs. These collaborations included:

- On-going collaboration with SPC on the Soil Biodiversity project to evaluate the likely undesirable impacts of climate change on the diversity of biological organisms in two selected locations under taro production, and potential desirable effects of various environmentally sustainable interventions on the same.
- Ongoing collaboration with PHAMA to assess current laboratory capacity at SROS and future analysis needs in context with PHAMA's aim to facilitate market access for Samoan products.
- SROS continued collaboration with PARDI to assist the revival of the Samoan taro industry via sensory evaluations of different taro varieties and their market acceptability for mass production purposes.
- Ongoing collaborations with overseas/local research institutions – e.g., USP, NUS, VUW, University of Newcastle and University of New South Wales.

SROS ensured effective training for its researchers was provided annually and included in this financial year were:

- Two scientists trained by ESR on testing of *Cannabis sativa L.* for evidence to be used in court prosecutions under the Narcotics Act 1967.
- Two scientists reading for MSc and PhD degrees at VUW on scholarships under the MOA between VUW and SROS.
- Two scientists trained by VUW on molecular research techniques.
- Ongoing participation of SROS staff and management in local and overseas training workshops that have relevance to SROS's mandate.
- PHAMA-funded/Cawthron Institute-coordinated capacity development on food safety and quality testing to enhance and extend the scope of accredited tests available at SROS.
- On-going HR capacity building activities by the VSA Scientific Adviser (Dr. Kenneth Wong) on scientific (project proposals, technical reports, etc) and business (marketing, business models, etc) writing skills, and JICA Senior Volunteer (Dr. Kenji Sakamoto) on research in medicinal and fragrant plants.

Output 1: Policy Advice to the Responsible Minister and Board of Directors

The Output 1 under the direct authority of the Chief Executive Officer is responsible for a diverse range of duties and tasks. It is expected to lead the way in providing advice to the Minister responsible for SROS and the Board of Directors, relating to the Organisation's mandated objectives and desired outcomes over the longer term. It 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.

The following sections highlight the Organisation's work carried out by the Chief Executive Officer in regular consultations with the Responsible Minister and Board of Directors and working collaborations with the other output divisions, feature key challenges faced by the Organisation during this financial year, and provide a brief outlook for the next financial year.

5.1 Board & Management Retreat

Photo 1: Participants in the SROS Board and Management Retreat, Orator Hotel, February 2014.

The SROS Board and Management Retreat held in February 2014 was the second retreat for the current Board of Directors; the first was held in March last year. Active participants included all current members of the Board of Directors, the CEO, Managers and support staff of SROS. Honourable Fa'amoetauloa Dr. Fa'ale Tumaali'i, Minister responsible for SROS, and the two Associate Ministers of the sector, were also vital contributors to the sessions held over one and a half days at the Orator Hotel (photo 1). The primary purpose of the retreat was to review the status of SROS, table SROS's proposed budget for the 2014-2015 FY and update its corporate plan appropriately. These activities provided the Honourable Minister, two Associate Ministers, Board members and SROS Management opportunities to work together to develop a better consensus concerning the future of SROS and a better understanding of the challenges ahead.

A review of the SROS Act was also identified as a key consultative process to be undertaken to ensure the continued relevancy of SROS objectives and activities to key stakeholders in the Samoan economy and society. This and other action items stipulated in the revised Corporate Plan 2015-2017 will be pursued by SROS Management and staff during the next three financial years.

The Corporate Plan 2015-2017 and its allied Statement of Corporate Objectives are being translated into the Samoan language for Cabinet and Parliament endorsement considerations, respectively.

5.2 Board of Directors: July 2013–June 2014

- Fonoti Perelini Perelini — Chairman
- Dr. Satupaitea Viali — Director
- Dr. Taema Imo-Seuoti — Director
- Manuleleua Dr. Sonny Lameta — Director
- Sulamanaia Montini Ott — Director
- Lalauena Palagi Taulealo — Director

- Taulealeausumai Laavasa Malua — Director (up to 13 December 2013)
- Suluimalo Amataga Penaia — Director (from 1 April 2014 – onwards)
- Tilafono David Hunter — Ex-Officio/CEO

5.3 Management: July 2013–June 2014

- Tilafono David Hunter — Chief Executive Officer
- Tuimaseve Kuinimeri Asora-Finau — Manager, Plant & Food Technology Division
- Gaufa Salesa-Fetu — Manager, Industrial Research Division
- Mere Aisake-Asi — Manager, Administration & Finance Division (up to 18 October 2013)
- Mamea Samuel Ieremia — Manager, Administration & Finance Division (from 25 November 2013 – onwards)
- Pousui Dr. Fiame Leo — Manager, Environment & Renewable Energy Division
- Lilo Samani Tupufia — Manager, Commercial Technical Services 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 (February 2012-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-December 2015) – 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.

5.4 Progress with the Corporate Plan 2012-2014

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 continues to seek to improve its ability to achieve its mandate and objectives as outlined by the SROS Act 2008 and Corporate Plan 2012-2014.

Corporate Plan Priority Objectives	***Activity Outcomes***
• To promote the national economy of Samoa based on research and development.	• NZ Tindall Foundation funding to the value of NZD$10,000 to assist SROS to further develop the international market for breadfruit flour in collaboration with the private sector businesses and overseas food manufacturers. • Establishment of a semi-commercial oil mill plant (3 oil expellers) in partnership with STEC to promote the commercialization of biodiesel production from coconut and *Jatropha* oils. • Ongoing partnership negotiations with the winning bidder of the SROS avocado oil processing equipments to start up

	commercial operation of an avocado oil processing plant. • 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 the co-implementation of biodiesel production and biomass gasification for electricity generation and land transport.
• To undertake scientific and technical research with the primary aim of adding value to local resources and services.	• Establishment of the new Commercial Technical Services Division to provide the needed technical analyses efficiently and effectively, to support the private sector and exporters in their efforts to expand primary food production, manufacturing/processing and the service industries. • Establishment of a Narcotics Laboratory to provide testing of *Cannabis sativa L.* for evidence to be used in court prosecutions under the Narcotics Act 1967. • Ongoing research to develop a process for the purification of coconut oil as cooking oil. • Ongoing research to screen (via sensory and nutritional evaluations) promising taro lines from cycle 8 and evaluate frozen supply chain for taro and breadfruit to export markets. • Ongoing research to optimize a vanillin extraction process from dried vanilla pods. • Laboratory research on bioethanol production utilizing locally available starchy crops completed.
• 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 for a margarine product using avocado and coconut oil blends. • Ongoing research to identify potential locally available fruits as raw materials to develop a process for making fruit wines.
• To establish partnership with the private sector and commercial interests to support the Organisation's activities.	• SROS membership and participation with the SCOC and SAME meetings, promoting SROS research and technical laboratory capabilities and engaging in development forums. • One-on-one meetings held with potential business partners and/or uptakers of SROS technologies associated with SROS's avocado oil, gluten free breadfruit flour and biodiesel.
• To ensure effective training for researchers and technical research.	• 10 scientists trained in-house by Cawthron Institute on new microbiology test methods and validation; financially supported by PHAMA. • Two scientists trained by ESR on testing of *Cannabis sativa L.* for evidence to be used in court prosecutions under the Narcotics Act 1967; financially supported by AusAID. • Two scientists reading for MSc and PhD degrees at VUW on scholarships under the MOA between VUW and SROS. • Two scientists trained by VUW on molecular research techniques; financially supported by Turkey Government and VUW. • One scientist trained in China on postharvest techniques; financially supported by Chinese Government. • Regular in-house training of SROS technical staff in chemical and microbiological tests, calibration methods, and research

methods.

5.5 Official and Promotional visits to SROS

Official and promotional visits to SROS during the financial year include the following:

15–18 July 2013: Professor Ron Wills, SROS Honorary Research Fellow in Postharvest Technologies, visited SROS to provide technical advice on the design and choice of treatments for a new project on the partial processing of breadfruits for the export market. He also made general observations of SROS's existing technical and research activities, and provided recommendations for the SROS Management to consider for improvement purposes, in the crucial areas of technical capacity (including postgraduate training), equipment maintenance, project load, and optimum experimental designs and appropriate data analysis methods to be applied to all research projects undertaken by SROS.

16–19 July 2013: A 3-member delegation from Masdar Consulting Company in the United Arab Emirates (UAE), visited SROS to discuss funding opportunities under the UAE Pacific Partnership Fund, to upgrade and commercialise the production and supply of biodiesel for electricity generation. SROS presented on its pilot scale biodiesel production activities and the desire via a public-private partnership arrangement, to upgrade production capacity to produce and supply about two million litres of biodiesel annually for electricity generation. SROS in partnership with STEC and Pacific Oil Ltd will be developing a project proposal on the commercialization of biodiesel production, to produce and supply biodiesel for electricity generation by EPC. The proposed scale of biodiesel production will replace about 10% of the imported diesel consumed annually by the EPC thermal generators to generate electricity.

5–9 August 2013: Professor Peter Rogers, SROS Honorary Research Fellow in Biofuels, visited SROS to provide technical advice on the progress of ongoing renewable energy projects, namely biodiesel and bioethanol. Technical issues discussed included: production of biodiesel using local raw materials and associated fuel, engine, and economics studies, and use of by-products from the trans-esterification process; production of ethanol using local raw materials for blending with petroleum, and; combined gasification/biodiesel production.

30 August 2013: NZ High Commissioner Jackie Frizelle and Aid Manager Michael Upton accepted an invitation to visit SROS premises, to discuss and explore potential funding opportunities for SROS's ongoing and new projects. The visit included a presentation from the SROS Management on SROS's mandate and ongoing technical and research activities, and visiting of the technical and research laboratories and facilities.

4–6 September 2013: Dr Ron Bowrey, a margarine specialist, visited SROS to provide technical advice on the progress of the Avocado Margarine and Coconut Oil Refinement projects. Dr Bowrey is currently doing consultancy type work and has many years of experience in the margarine industry in Australia. His affiliation with SROS was through one of SROS's Honorary Research Fellows, Professor Ron Wills, who has worked with Dr Bowrey at the University of New South Wales. Dr Bowrey's array of experience includes fats and oils and industrial margarine processing. He provided valuable technical insights and knowledge on research and commercial aspects of edible oils generally, as well as the world situation for coconut oil having had the many years of experience in the said field.

4–5 December 2013: Assessment team from IANZ comprising of Ian Laban, Dennis Karl and Warwick Aspin conducted a full audit of both microbiology and chemistry laboratories of SROS; an assessment normally undertaken every three years by IANZ as part of accreditation certification of SROS laboratories.

9 December 2013: Turkey Government Ambassador to Samoa, H.E. Damla Yesmin Say, visited SROS to discuss the progress status of two projects (Bioethanol Production and Breadfruit Pathogen Identification) funded by the Turkey Government and implemented by SROS.

13 March 2014: SROS hosted a group of 25 Science students and staff from American Samoa Community College (ASCC) to learn more about the research and development projects undertaken by SROS and the process of doing experiments in our established laboratories.

31 March 2014: Ministry of Justice and Court Administration (MJCA) Visitation. Judges and Court Administration personnel visited and observed the capabilities of SROS Narcotics Laboratory. The Laboratory is providing new services for analyzing drugs as well as alcohol in criminal court cases in Samoa.

9 May 2014: Hon. Minister of SROS hosted a visit by Senator Brett Mason of the Australian Government and his delegation to observe the progress of the Australian Government-funded PARDI and PHAMA projects undertaken by SROS.

23 May 2014: Organic Farming Advisory Committee led by the Hon. Prime Minister visited SROS to observe the progress of the PARDI taro project and participated in the sensory evaluation of seven months old taro.

28 May 2014: There were 40 final year students of the University of the South Pacific visiting SROS to receive introduction to research institutes and organisations and career paths when leaving University.

26 June 2014: SROS hosted a visit by American Samoa delegation traveling over for the Two Samoa Talks. SROS showcased their projects and what they do based on their mandate and vision.

5.6 Outlook for the next Financial Year

The SROS's continued engagement of the private sector, potential investors and donors to commercialise SROS laboratory proven and scientifically tested product prototypes such as its gluten-free breadfruit flour, avocado oil and biodiesel as well as future product developments like the avocado margarine and refined coconut oil. The ultimate goal is to encourage the private sector to utilise and potentially partner with SROS to undertake industry-driven/oriented product development activities that will have a win-win outcome for stakeholders involved. As part of SROS's commitment to deliver on the above, negotiations with the private sector, potential investors and donors, will continue to ensure that the commercialization of at least one of the above-mentioned products will be realized desirably by December 2014.

The expansion of SROS's technical services capabilities following the establishment of the new Commercial Technical Services Division and a Narcotics Laboratory will strengthen SROS's accredited and non-accredited testing capacities to cater for Samoa's needs.

The review of SROS's Act to include food and narcotics testing, and the undertaking of environment impact assessments to facilitate SROS growth in general and strengthen its earning capacity to ultimately reduce SROS dependence on Government funding.

Continued work in progress of research projects mentioned in the following sections of this report to be completed within agreed timeframes. In summary, the outlook for SROS for the next financial year will continue to be demanding and challenging.

5.7 Future risks and uncertainties

Funding sustainability continues to be an ongoing challenge given SROS's dependence on Government and external funding for its operations and research mandate. With increasingly competitive funding requests made to Government and the Government's strategy to promote self sustainability of Ministries, Public Beneficiary Bodies (PBBs) and State Owned Enterprises (SOEs) by tightening their annual budget provisions with the aim to reduce its national debt.

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

Moreover, competing uses for the locally grown feedstocks such as coconuts, breadfruits and avocado fruits, their undesirably low quantities and scarce numbers of the preferred varieties, may impede the scaling up and commercialisation of production of biodiesel, gluten-free breadfruit flour and avocado oil for the local and export markets.

In view of the above, the challenge for SROS going forward is 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;
- promote and support the establishment of plantations/orchards of the preferred varieties of the feedstocks, to ensure long-term stable supply of the desired quantities for large scale processing of the above mentioned products; and,
- develop intellectual property ownership to SROS scientific research outcomes which could potentially lead to an outright purchase of the research results and/or entering into some form of commercial partnership with another party to achieve financial gain.

Output 2: Sustainable Management of Renewable Energy Resources and Environment

The Environment and Renewable Energy Division is responsible for Output 2 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 key achievements and work in progress of the Environment and Renewable Energy Division during this financial year.

6.1 *Jatropha* as an alternative source of feedstock for Biodiesel production

Funded by the Governments of Austria and Italy through the International Union for Conservation of Nature (IUCN) to the value of USD$150,000, this is an extension of the Coconut Oil Biodiesel project which aims to evaluate *Jatropha* as an alternative source of feedstock for biodiesel production, and also assessing its potential invasiveness, and yield and quality of seeds for maximum oil expression. The outcomes of the project will be very helpful with the economical viability and sustainability assessment of *Jatropha* oil for biodiesel production.

The three oil expellers for the project were procured from TINYTECH PLANTS (India) in July 2013. The installation and commissioning of the expellers at STEC Mulifanua coconut plantations were executed by a technician from TINYTECH PLANTS, with the assistance of SROS, MNRE, STEC and R-Steel Company technical and casual staff.

The official launching of the expellers was held in September 2013, with the keynote address given by the Honourable Minister of the Ministry of Works, Transport and Infrastructure (MWTI) on behalf of the Honourable Prime Minister. In his keynote address, the Honourable Minister acknowledged the generous financial support of the Governments of Austria and Italy through IUCN, for this project on energy efficiency and renewable energy applications in the Land Transport Sector (photo 2).

A field trial was also established on site at STEC Mulifanua coconut plantations to assess the potential invasiveness of *Jatropha*, and the yield and quality of *Jatropha* seeds for oil expression prior to biodiesel production (photo 3). During the fruiting seasons, the *Jatropha* seeds were collected from the marked research plots as well as the rest of the plantation on a fortnightly basis. The seeds were weighed, dried, decorticated and stored for oil expression.

Photo 2: Demonstration of the use of oil expeller during the official launching.

Photo 3: Field plot of *Jatropha* plants at STEC Mulifanua coconut plantations.

During oil extraction using the oil expellers, the oil yield gave less than 5% compared to the 50% from laboratory yield by means of soxlets solvent extraction, 30-40% from extraction studies elsewhere, and contrasted to about 55% of oil yield extracted from coconut copra using the same type of expellers. These results indicated that the oil expellers were highly efficient in extracting oil from coconut copra but were highly inefficient in extracting oil from *Jatropha* seeds, due to the small size of the seeds. The project plans to procure an oil expeller specifically for oil extraction from plant seeds to assess its efficiency and effectiveness to extract oil from *Jatropha* seeds.

6.2 Coconut Oil Biodiesel Project

Funded by the Governments of Austria and Italy through IUCN to the value of USD$200,000, coconut oil biodiesel production using a 200-L capacity plant is still ongoing. The coconut oil is supplied by STEC using the newly installed oil expellers at the STEC Mulifanua coconut plantations. The trans-esterification process using sodium hydroxide (NaOH) and methanol (CH_3OH) are still being used to catalyse the coconut oil conversion to biodiesel.

More than 10 vehicles from SPREP, STEC, MNRE and SROS have continued to be fuelled with B10 which is a blend of 90% diesel and 10% biodiesel, for ongoing public awareness and promotional activities of environmentally clean renewable energy. Interests have been received from other Ministries, expatriate workers and the public for B10 to fuel their vehicles.

The Government through the National Energy Coordination Committee (NECC) endorsed a joint SROS/STEC/MNRE biodiesel project proposal to the International Renewable Energy Agency (IRENA)/Abu Dhabi Fund for Development (ADFD) for funding considerations, to scale up and commercialise the co-implementation of biodiesel production and biomass gasification for electricity generation and land transport. At the IRENA Assembly in Abu Dhabi, United Arab Emirates in January 2014, the Assembly formally announced Samoa's success in securing a USD$7,000,000 soft loan from its IRENA/ADFD for this project. The MOF and STEC are presently negotiating with IRENA/ADFD Secretariat the terms and conditions of the soft loan and it is expected that the soft loan agreement will be finalized in the next financial year.

A Biodiesel Production and Quality Assurance Manual was also developed for the Division's scientists to adhere to in order to ensure that every batch of biodiesel produced conforms to international standards [e.g., American Society for Testing and Materials (ASTM)]. Every batch of biodiesel produced during this financial period continued to conform to ASTM standards (esters > 95% m/m; FFA < 1% m/m (< 1 g/100 g), and; moisture < 0.05% m/m (< 0.05 g/100 g). A sample was also sent to Cawthron Institute in Christchurch, New Zealand, for independent verification (table 1). SROS endeavors to test every batch of produced biodiesel for esters, FFA, moisture and other quality parameters to ensure compliance to ASTM standards before blending it with fossil diesel to make up the B10 product.

Table 1: Quality parameters of biodiesel produced by SROS.

Tests	Cawthron Institute test results	SROS tests results
Esters	-	≥ 97%
FFA	0.2 g/100g	0.2 g/100g
Methanol Content	0.62 %	1.4 %
Specific Gravity	0.87	0.88
Sodium	27 mg/kg	-
Moisture	32 g/100g	540 mg/kg

SROS in partnership with STEC and MOF have also submitted a proposal to EU-GIZ grant facility to acquire the necessary resources to produce up to 600,000 L of biodiesel annually for the land transport sector. The preferred blend is B5 and the proposed budget for the project is €650,000.

Through collaborative work with the School of Mechanical and Manufacturing Engineering of the University of New South Wales, Australia, the following scientific paper on engine performance testing using the B10 blend produced at SROS was presented at the Australian Combustion Symposium that was held in November 2013, at The University of Western Australia, Australia. The biodiesel component of this blend was produced using coconut oil, ethanol and lipase enzyme.

- Woo, C., S. Kook, P. Rogers and S. Tupufia (2013) Utilisation of coconut oil-based 10% biodiesel to improve performance of an automotive-size common-rail diesel engine. Proceedings of the Australian Combustion Symposium November 6-8, 2013, The University of Western Australia. 4 pp.

6.3 Bioethanol Project

Funded by the Government of Turkey to the value of USD$200,000, the Bioethanol project has completed its laboratory studies on method development and optimization to evaluate the potential hydrolysis of starch by the two selected enzymes (*alpha amylase* and *amyloglucosidase*) using locally grown starchy crops namely breadfruit and cassava as feedstocks.

The following summary is derived from these laboratory studies.

- Laboratory Investigation Results:

  Air Drying at room temperature for two days of chips for flour preparation is preferred than oven drying at 60^{o}C for the same period (photo 4). Up to 80% of cassava flour (figure 1) and 50% of breadfruit flour (figure 2) can be converted to glucose using 0.5 % v/w dosage of enzymes and lower. Sugar production from cassava and breadfruit flour reach maximal conversion by one day. For a complete fermentation process, liquefaction at 90°C for one hour is enough and saccharification for one day at 30°C is preferred to yield maximum glucose for ethanol conversion. Ethanol conversion from 150 g/L of glucose (from 200 g/L cassava flour) produces up to 60 g/L or 30% ethanol per gram of cassava flour. High concentration of glucose can cause some metabolic inhibition during fermentation. Substrate or feedstock preparation is a key factor to make the bioethanol production process economical.

(dried breadfruit slices)

(dried cassava slices)

Photo 4: Drying of breadfruit and cassava slices in preparation for bioethanol production.

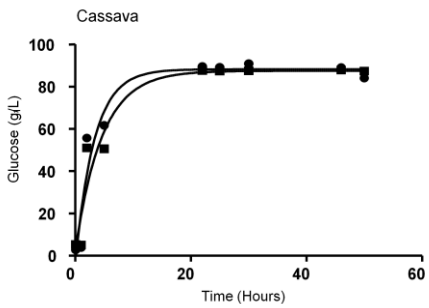

Figure 1: Kinetics for conversion of flour to glucose for cassava.

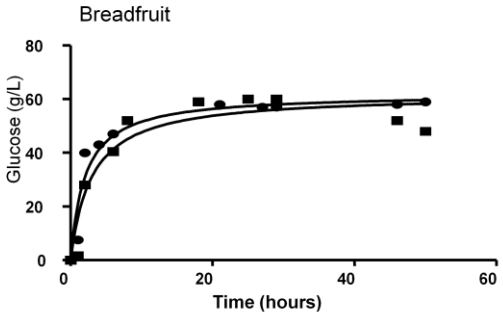

Figure 2: Kinetics for conversion of flour to glucose for breadfruit.

- Challenges for Bioethanol Production and Feasibility for Samoa:

  Bioethanol production is well commercialized in many parts of the world with huge volumes of low cost and subsidized starchy or sugar resources. For example, Brazil and Australia use cane sugar, USA uses corn starch, Europe uses beet sugar, and Asia uses cassava starch. The success of bioethanol production in the USA, Brazil and Asian countries like Thailand and Philippines comes from government interventions and subsidies. Thailand uses cassava as their primary feedstock for bioethanol production. In 2012, the fixing of cassava price at US$0.087/kg led to the stoppage of operations of several bioethanol plants. This information suggests that economic viability of relatively large existing bioethanol plants (ca. 50 ML/year from 32,000 ha of cassava/year) requires cassava price of ca. SAT$0.13/kg. It is known that biomass feedstock accounts for 50-80% of the final price of ethanol (Oxfam, 2005). Bioethanol production in Samoa would therefore need to get comparable feedstock prices. Furthermore, capital investment is relatively high for bioethanol with a 1 ML/year cassava bioethanol plant estimated to cost nearly SAT$30M and requiring nearly 600 ha of cassava plantation. These appear to be very challenging conditions for Samoa.

- Conclusions and Recommendations:

  Bioethanol is an alternative renewable energy and a substitute for both petrol and diesel fuelled engines. It is an alternative source of energy with a production cost that is very expensive to commercialise in Samoa at this current stage. More resources and government intervention (policies, regulations and subsidies) need to be in place first for a smaller scale production to be successful and sustainable. It is recommended that carbohydrate sources need to be fully assessed according to volume, cost and competing uses before determining a viable feedstock for bioethanol production for Samoa. From the laboratory investigation, cassava and breadfruit are shown to be good resources for bioethanol production. Flour production conditions and simultaneous saccharification and fermentation process to produce ethanol could be further optimized and understood. This process could then be applied to any other first generation feedstock, but not for second generation feedstock or cellulosic materials. Experimental protocols tested and results obtained from these laboratory studies will be referenced and applied if and when bioethanol production from breadfruit and cassava grown in Samoa is assessed to be economically viable.

6.4 Soil Biodiversity Project

Australian Government AusAID

Funded by the AusAID International Climate Change Adaptation Initiative (ICCAI) and the Secretariat of the Pacific Community (SPC) to the value of AUD$50,000, and in collaboration with the Australian Centre for International Agricultural Research

(ACIAR)-funded/University of the South Pacific (USP)-coordinated Soil Health Project, the Soil Biodiversity project aims to evaluate the effects of various non-chemical treatments (Biochar, *Erythrina* and *Mucuna*) on the growth and yield of two varieties of taro (Samoa 1 and Samoa 2), and the health and biodiversity of two soil types located in Salani and Safa'ato'a (photo 5). The standard Farmer's practice was used as the control for comparison purposes.

Photo 5: Manual incorporation of biochar treatment in a field plot at Salani.

At harvest, the highest taro corm weights were observed with Samoa 2 variety in the *Mucuna* and Biochar treated soils in Salani, whilst the lowest corm weights were found with Samoa 1 variety in the Farmer's practice (control) and *Mucuna* treated soil in Safa'ato'a (table 2). Both taro varieties grew well in Salani than Safa'ato'a with Samoa 2 performing better than Samoa 1 in both sites. *Mucuna* and *Erythrina* treated soils produced more corm weight than Biochar treated soil for both taro varieties in both sites when compared with Farmer's practice.

Table 2: Taro corm weights (t/ha) of taro varieties (Samoa 1 and Samoa 2) treated with non-chemical soil amendments at two sites (Safa'ato'a and Salani).

Site	Treatment	Taro variety	
		Samoa 1	Samoa 2
SAFA'ATO'A	Farmer's practice	$5.70^{f,1}$	8.04^{cdef}
	Mucuna	6.14^{f}	9.09^{cde}
	Erythrina	7.55^{cdef}	10.10^{bc}
	Biochar	7.37^{def}	7.58^{cdef}
SALANI	Farmer's practice	7.17^{ef}	9.93^{bcd}
	Mucuna	10.15^{bc}	13.16^{a}
	Erythrina	9.58^{bcde}	9.87^{bcd}
	Biochar	8.98^{cde}	11.93^{ab}

[1]comparison of corm weights (t/ha) between two taro varieties treated with non-chemical soil amendments in two sites: values with a different letter are significantly different at p = 0.05 using least significant difference (LSD).

During the cropping period, soil samples were collected at planting and harvesting for physical, chemical and biological analysis. The analysis of soil samples is ongoing and analysis results will be used to determine the effects of the non-chemical treatments on the growth and yield of the two varieties of taro, and the health and biodiversity of the two soil types using analysis of variance, regression and correlation techniques.

A literature review describing the impacts of climate change on soil biodiversity in the South Pacific has been accepted for publication in a peer-reviewed science journal.

- Fiame, L., K.Y. Wong and S.J. Tauati (2014) Risks to soil biodiversity on the islands of the South Pacific. PACIFIC CONSERVATION BIOLOGY Vol. 20, Surrey Beatty & Sons, Sydney. 15 pp.

6.5 Fruit Wine Project

The Fruit Wine project is funded by the Republic of South Korea to the value USD$140,000. The objective of this project is to add value to local resources by producing wine like beverage from various fruits that are available and abundant in Samoa. The fruits presently investigated in the laboratory include green coconut juice and flesh, ripe banana, ripe pawpaw, pineapple, mango, taro corms, breadfruit, ambarella fruit (vi), starfruit and Polynesian arrowroot (masoa).

Photo 6: Set up of anaerobic fermentation process in the laboratory.

The yeast used for initial fermentation trials is baker's yeast while awaiting the order for winemaking yeast from New Zealand. A component of this project will also look at screening yeast from various fruits to source a yeast strain that is local and able to withstand high ethanol concentration (> 12% v/v). The procedure used is a two stage fermentation process. Stage one is a crucial seven-day aerobic activity followed by stage 2 which is an anaerobic fermentation (photo 6), which is checked and tested for alcohol and other variables during its two-month period. After two months the wines then undergo a double distillation to concentrate the alcohol while preserving the fruity flavor. From the completed trials thus far, banana wine had 12% alcohol content, Coconut, 28% alcohol content and starfruit, 41% alcohol content.

Production of wine from other fruits is ongoing with focus to be placed on the actual costing of the production scale based on 100 L distillation batch. A comparison will also be made on the economics of using bacterial fermentation versus yeast fermentation as part of the overall desirable outcome of maximizing production using minimum input costs.

Output 3: Plant and Food Research and Development

The Plant and Food Technology Division is responsible for Output 3 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 key achievements and work in progress of the Plant and Food Technology Division during this financial year.

7.1. Taro Revitalisation Project

The Taro Revitalisation project is a component of the Pacific Agricultural Research Development Initiative (PARDI) funded multi-stakeholder programme entitled "Developing a clean seed system for market-ready taro cultivars in Samoa". The partners include SPC, MAF, USP, Samoa Farmers Associations (SFA) and SROS. The overall aim of the programme is to support the sustainable growth of Samoa's taro export by developing a viable system to provide high quality planting material of an appropriate diversity of market-preferred varieties and relevant information to all supply chain actors. The component implemented by SROS to the value of AUD$25,020 falls under objective 1 of the programme which is to "screen available varieties of taro for defined market opportunities, such as fresh exports, higher value and more durable products and partial processing". The objectives of the component implemented by SROS are to:

- conduct field trials on site using appropriate experimental design for sampling of corms for analysis; and,
- screen new varieties for sensory and nutrient content and consumer preference.

Photo 7: Field layout of taro trial.

To realise the abovementioned objectives, a field trial was established in October 2013 using headsetts of four new taro lines from Cycle 8 of breeding (Samoa 1 x C7-047, Samoa 1 x C7-083, Samoa 2 x C7-051 and C7-102 x C7-083) to evaluate their growth and corm yield, and consumer preference via sensory and nutrient evaluations of corms (photo 7). The established Samoa 1 and Samoa 2 varieties from Cycle 5 and Maagiagi variety from for comparison purposes.

Corms were harvested from the taro plots at seven (May 2014) and eight months (June 2014) after planting and their weights were recorded. The same corms were used to determine the preference of consumers for the new taro lines via sensory evaluations (appearance and taste), using the following ratings: excellent, 1; good, 2; neither like nor dislike, 3; dislike, 4; and, unacceptable, 5 (photo 8). The Tausala-ni-Samoa taro variety which was the prominent variety in Samoa before the taro leaf blight devastated the Samoa taro industry in 1993, was air freighted over from Fiji to be included as one of the benchmark taros for the evaluation.

The weights of 7-month and 8-month old corms harvested from the four new taro lines were comparatively lighter than the benchmark varieties (table 3). Results from sensory evaluations show that one of the new taro lines (C7-102 x C7-083) consistently ranked near the top with the benchmark varieties (table 4).

Photo 8: Sensory evaluation exercise with members of the National Organics Advisory Committee.

Table 3: Average weights of 7-month and 8-month old corms of taro cultivars.

Cultivar	Weight/corm (kg)	
	7-month old corm	8-month old corm
New taro lines		
Samoa 1 x C7-047	0.44[b,1]	0.47[bc]
Samoa 1 x C7-083	0.53[ab]	0.53[ab]
Samoa 2 x C7-051	0.42[b]	0.42[bc]
C7-102 x C7-083	0.42[b]	0.42[bc]
Benchmarks		
Samoa 1	0.58[ab]	0.35[c]
Samoa 2	0.69[a]	0.67[a]
Maagiagi	0.56[ab]	0.54[ab]

[1]comparison of corm weights (kg/corm) between four new taro lines and three benchmarks: values with a different letter are significantly different at p = 0.05 using least significant difference (LSD).

Table 4: Sensory evaluations (appearance and taste) of 7-month and 8-month old corms of taro cultivars.

Cultivar	7-month old corm		8-month old corm	
	Appearance	Taste	Appearance	Taste
New taro lines				
Samoa 1 x C7-047	2.43[bc,1]	2.44[bc]	2.43[bc]	2.34[ab]
Samoa 1 x C7-083	2.11[ab]	2.36[bc]	2.51[c]	2.60[bc]
Samoa 2 x C7-051	2.64[c]	2.73[c]	2.66[c]	3.06[c]
C7-102 x C7-083	2.18[ab]	1.96[a]	2.29[abc]	2.31[ab]
Benchmarks				
Samoa 1	2.05[a]	1.89[a]	2.06[ab]	2.20[ab]
Samoa 2	2.16[ab]	2.16[ab]	1.97[a]	1.94[a]
Maagiagi	2.17[ab]	2.35[bc]	2.03[ab]	1.97[a]
Tausala-ni-Samoa	1.95[a]	2.27[ab]	2.06[ab]	2.09[a]

[1]comparison of consumer preference via sensory (appearance and taste) evaluation between four new taro lines and four benchmarks: values with a different letter are significantly different at p = 0.05 using least significant difference (LSD).

An external review took place for the PARDI programme in February 2014 by an Australian consultant Dr. Tony Dunne. He was accompanied by the PARDI Team Leader Dr. Steven Underhill and the ACIAR Pacific Crops Manager Richard Markham. The stakeholders (MAF and SROS) prepared presentations on the progress of their respective activities. The reviewer also conducted formal visits to all stakeholders to scope for future agribusiness activities in the event of a phase 2 of the PARDI programme being approved.

Analysis of nutritional values of the 7-month and 8-month old corms is ongoing and the project is expected to be completed in June 2015.

7.2. Partial processing of breadfruits for export market

The first laboratory trial started in August 2013 for the postharvest treatment of breadfruits by looking at partial processing, as an approach to increase the shelf life quality and avoid the need for quarantine treatment as required for fresh breadfruits. The laboratory trials assessed the following postharvest treatments:

- Inhibition of browning reaction for peeled fruits;
- Effect of temperature storage, and;
- Effect of packaging (containers vs. plastic bags).

The initial results were very promising with browning not appearing to be a major problem after peeling. The lower temperature of 15^{o}C provided the better results and the use of plastic bags was also clearly the better option for packaging.

The second laboratory trial will be conducted in the next financial year and will focus on lower storage temperatures (< 15^{0}C) in conjunction with dips aimed at minimising surface browning reactions if they can further prolong the sliced fruits' shelf life.

7.3. Taro Freezing Project

PHAMA
Pacific Horticultural & Agricultural Market Access Program

In September 2013, the Pacific Horticulture and Agriculture Market Access (PHAMA) programme via the Market Access Working Group (MAWG) approved the freezing of taro as one of its priority activities to assess its potential viability for exporting taro, and consequently approved SROS's request for funds to the value of AUD$22,000 for a blast freezer and to conduct taro freezing research activities. The research aims to evaluate two key issues:

- Whether taro slices require pre-treatment before freezing; and,
- The combined effects of the type of packaging and freezing on the resultant end product quality.

The following flow chart (figure 3) shows the different stepwise pathways currently being researched to determine the quality of frozen taro pieces attained.

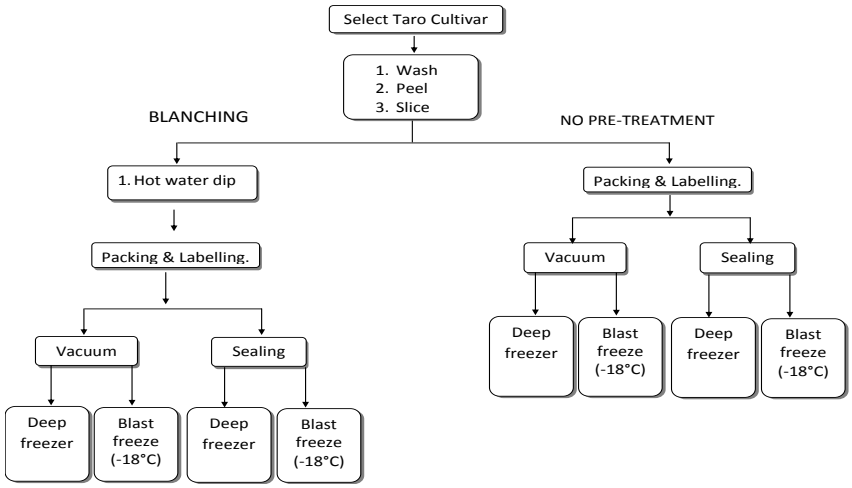

Figure 3: Flow chart of the different stepwise pathways tested to determine the quality of frozen taro pieces attained.

The research commenced in April 2014 and focused on the Samoa 1 and Samoa 2 taro varieties that are available in ample supply and represent white and pink taro, respectively; the colour being one of the important selection factors used by consumers. The samples are stored in deep freezers (photo 9) with sensory evaluations to be undertaken in the third (July 2014) and sixth (October 2014) months, respectively, after storage. The evaluations will indicate consumer preference for taro processed in a certain way and whether there is a need for a processor to invest in equipments such as blast freezers and vacuum packaging machines.

(samples in blast freezer)

(samples in deep freezer)

Photo 9: Sliced taro samples in the two freezers.

7.4. Breadfruit Pathogen Phylogenetics Project

The Turkey Government in July 2013 provided USD$50,000 to fund a project looking at studying the phylogenetic relationship amongst pathogens found on fresh breadfruits. The overall aim of the project is to build the capacity of SROS staff as well as equip the laboratory to be able to conduct molecular level research that would allow it to study issues of economical significance for its food supply. It is also anticipated that at the end of this project, a better understanding of the pathogens which affect our breadfruits when in season and consequently export opportunities.

Two SROS scientists, Tuimaseve Kuinimeri Finau and Annie Toailoa attended a two weeks intensive training at VUW, New Zealand, in November 2013 to learn molecular research techniques. The training focused around two techniques for DNA extraction namely the chemical and boiling extraction methods. Both methods generally involve:

- Microbe isolation on plates;
- DNA extraction;
- Polymerase chain reaction process;
- Gel electrophoresis process and UV photo;
- Preparation of PCR product for sequencing, and;
- DNA Sequence Analysis.

The above training was also made possible through the in-kind assistance of VUW via the provision of free accommodation for the two scientists and the waiving of the training fees. As a result of this training all the required resources (equipment and consumables) were identified and are now being sourced. Training for the rest of the project team by the two trained staff will follow once all the resource requirements are on board before the research work starts. A draft standard operating procedure has been compiled for the DNA extraction methods to assist with on-site staff training in operating the equipment.

7.5. Vanilla Extraction Project

The ultimate aim of the Vanilla Extraction project is to find the most economical method for vanillin extraction which farmers could use to add value to their vanilla beans rather than sending it abroad for processing. Laboratory studies started for the vanillin extraction efficiency trials, and were designed to determine the effects of ultrasound time on the extraction process (photo 10).

Photo 10: Vanilla pods and extracted samples.

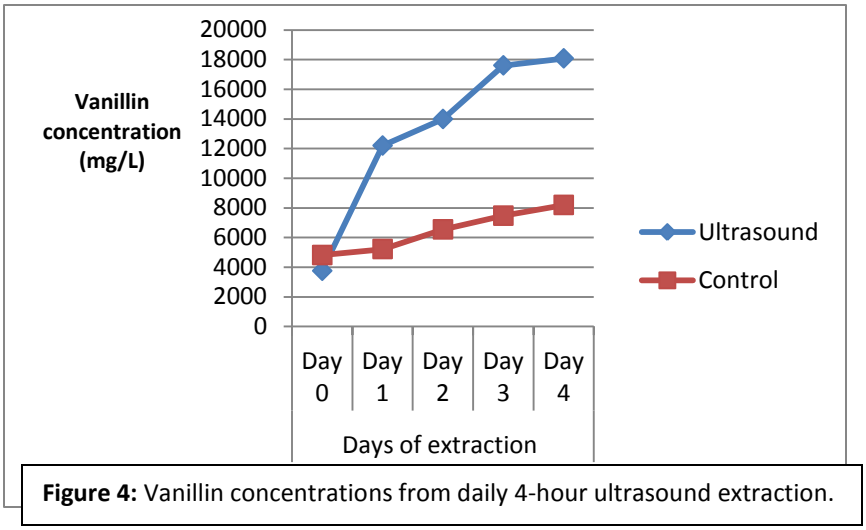

Figure 4: Vanillin concentrations from daily 4-hour ultrasound extraction.

Figure 4 shows the results on vanillin concentrations from the three-fold extraction with daily application of four hours of ultrasound. It clearly indicates the positive impact of applying ultrasound to the extraction process by significantly increasing vanillin concentration when compared to normal extraction (no ultrasound). The samples have been diluted to 35% alcohol and are being stored for a month before vanillin concentrations are determined again. An end-of-project report will be prepared in the next financial year which will detail the process used and recommendations to vanilla growers on how to develop processed products from their vanilla beans.

Output 4: Industrial Product Development Services

The Industrial Research Division is responsible for Output 4 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 key achievements and work in progress of the Industrial Research Division during this financial year.

8.1 Gluten-free breadfruit flour

The Tindall Foundation in New Zealand provided funding to the value of NZD$10,000 to assist SROS to further develop the international market for breadfruit flour. The SROS has been collaborating with an interested local food processing company, and utilizing the funds to procure the raw materials, produce the finished product, and develop and distribute samples with potential international buyers in New Zealand and elsewhere. SROS shipped two samples of flour to New Zealand to a potential user (Gluten-free Made Easy, GFME) and preliminary feedback indicated very positive results after several attempts with the Breadfruit Flour.

The SROS has also been collaborating with Vailima Breweries Ltd with their ongoing research on using locally available raw materials as a carbohydrate source for their brewing, and has been supplying the latter with SROS breadfruit flour to be tested as a potentially viable ingredient to replace a significant amount of the imported malt. Brewing using breadfruit flour as a carbohydrate source has been proven successful by the popularity of the Vailima Natural beer (photo 11), and Vailima Breweries Ltd is a potentially substantial local buyer of breadfruit flour in the future, which should make commercialization and scale up of breadfruit flour processing much more attractive to local food processing businesses.

Photo 11: Media advertisement of Vailima Natural beer.

In June 2014, bulk production of breadfruit flour started to obtain the desired quantity for distribution to food vendors servicing the UNSIDS Conference in September 2014. This initiative presented SROS with a great opportunity to promote the Gluten-free Breadfruit Flour to the conference delegates from around the world, with the expectation that it would generate positive feedback to help encourage and induce local food processing businesses to commercilise production. SROS also participated in a planning meeting held in Hawaii on a regional initiative to establish breadfruit flour production in the Pacific. The meeting organisers have been lobbying the US Government for financial support of work relating to breadfruit flour production to be undertaken in Micronesia, Hawaii and other Pacific islands including Samoa.

Photo 12: Prototype solar dryer being tested by SROS for drying breadfruit slices for flour production.

A couple of bottlenecks associated with the scaling up of breadfruit flour production are the comparatively high costs associated with the fruits and electricity for fruit drying. To address the latter bottleneck, an initiative was started to design and manufacture a hybrid solar dryer locally for use in the drying processes. The main objective of this project is to assess

the effectiveness for the drying of fresh produce such as breadfruit, and also other local produce such as taro, coconut meal and tea leaves for development into export products. A local business has already built the prototype using his own resources, and the same is presently being evaluated by SROS (photo 12). SROS is presently designing another modified version to be constructed for testing purposes.

8.2 Avocado Oil

The Sale and Purchase Agreement and Memorandum of Understanding (MOU) with the winning bidder for the SROS industrial avocado oil production plant, were finalized by the SROS Board of Directors and Management, and subsequently endorsed by the Tenders Board in June 2014. The Sale and Purchase Agreement and MOU were sent to the winning bidder, and SROS is awaiting a response from them for further discussions on the two documents, with the desired expectation that both will be formalized in the early months of the new financial year.

8.3 Coconut Oil Refinement Project

Funded by the Samoan Government to the value of SAT$400,000, the Coconut Oil Refinement project is implemented in parallel with the Avocado Margarine project. The aim of the project is to evaluate potentially low cost technologies using locally available resources (such as biochar and fine sand), to strip or reduce the aroma of coconut oil which makes the oil undesirable for cooking purposes. The production processes used by the copra industry and virgin coconut oil producers are likely contributors to the strong aroma of coconut oil produced.

Photo 13: Laboratory experiment on filtration methods to purify coconut oil for cooking purposes.

Four fractions of sand separated according to sieve size, locally produced biochar and imported activated carbon were tested for their use to improve the quality of the coconut oil (photo 13). Laboratory analysis of the filtered coconut oil samples is ongoing to determine a feasible combination that will enhance the quality of the coconut oil and reduce the undesired aroma and flavor for cooking purposes.

8.4 Avocado Margarine

Funded by the Samoan Government to the value of SAT$393,965, the Avocado Margarine project is implemented in parallel with the Coconut Oil Refinement project. Margarine consists of three phases – water phase, oil phase and fat phase. This research has been focusing more on the fat phase as it has implications on exactly the type of oil blend to be used.

Photo 14: Prototype samples of avocado margarine from ongoing laboratory experiments.

Laboratory trials of margarine blends (photo 14) was conducted using coconut oil and Palm48 palm oil, and the results show some success in producing blends that have consistent solids above room temperature (around 30°C), to hold the margarine together when it is out of the refrigerator (figure 5). The two oils had a much higher slip melting point (SMP) than avocado oil. Avocado oil was not used in the hardstock blends that were measured for solid fat content

(SFC), but it will be included as a liquid component to be blended with the preferred fat hardstock for making the margarine. A typical margarine blend should have some solids at around 20°C and almost none at 40°C as shown in figure 5. The SFC determination is a vital tool for developing a good blend of constituents for the fat phase of margarine.

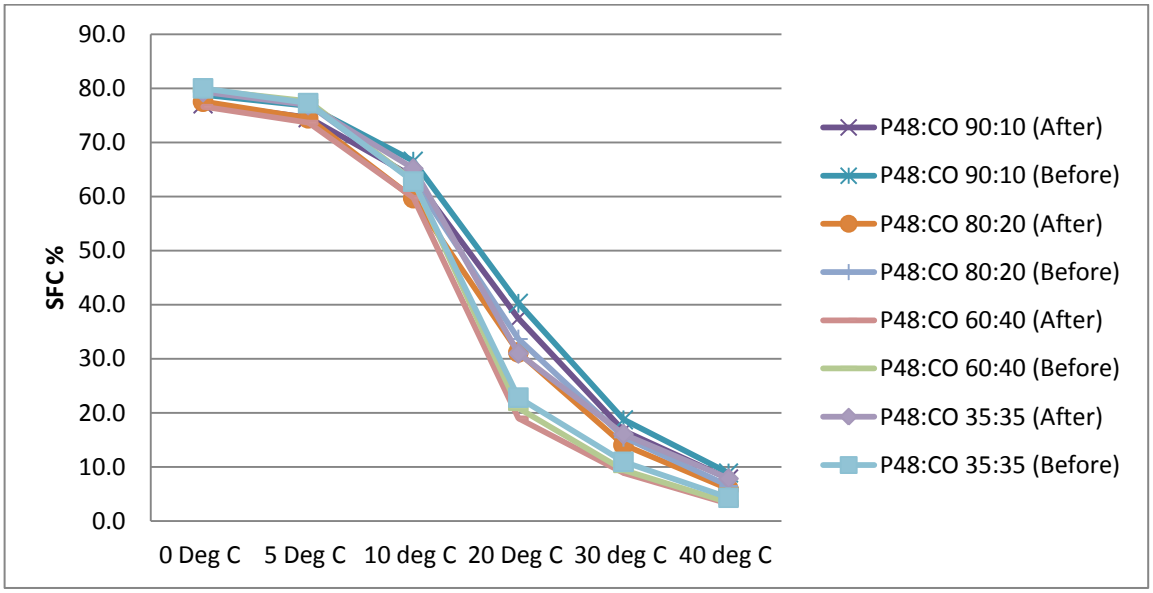

Figure 5: Solid Fat Content (SFC) for the experimental oil blends [coconut oil (CO) and palm oil fraction (P48)].

In January 2014, SROS appointed Dr. Ron Bowrey from Australia as an Honorary Research Fellow to assist and work closely with the staff of the Industrial Research Division with its ongoing product development projects, specifically avocado margarine project. Dr Ron Bowrey has many years of experience in the processing of vegetable fats and oils, and formulation and manufacture of fat-based foods.

Output 5: Commercial Technical Services

In view of the necessity to strengthen SROS's technical service related activities, so that the Organisation continues to respond to the emerging essential testing requirements of its clients, a new output called Output 5 – Commercial Technical Services was established. The newly established Commercial Technical Services Division is responsible for this output. The mandate of the new division is to continue to provide the needed technical analyses efficiently and effectively, 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 key achievements and work in progress of the Commercial Technical Services Division during this financial year.

9.1 Narcotics Laboratory

Australian Government AusAID

In partnership with the Attorney General's Office (AGO) and Ministry of Police (MOP), and funded by the AusAID-funded Samoa Law and Justice Sector programme, SROS officially launched its Narcotics Laboratory in July 2013 (photo 15). The principal purpose of the laboratory is to provide testing of drugs for evidence to be used in court prosecutions under the Narcotics Act 1967. The laboratory has started with the testing of *Cannabis sativa L.* (marijuana), and plans to develop testing for other forms of Narcotics (e.g., methamphetamine or ice) to cater for developments in Narcotic legislations.

Photo 15: Hon Minister of the Ministry of Police cutting the ribbon during the official launching of the SROS Narcotics Laboratory.

To ensure long term stability of the services rendered by the Narcotics Laboratory, the Samoa Law and Justice Sector programme funded two SROS scientists, Lilo Samani Tupufia and Phillip Reti, for training in September 2013 at the Institute of Environmental Science and Research (ESR), Auckland, New Zealand, to become authorised analysts under the Narcotics Act 1967. This brings the number of authorized analysts at SROS to service the Narcotics Laboratory to four.

9.2 Accreditation

IANZ

SROS continues to work to maintain international accreditation of their testing laboratories under the ISO/IEC 17025 standard. SROS testing laboratories continue to strengthen their technical competency and quality management system to assure customers that the analysis results they get are acceptable and recognised locally and abroad. The testing service provided by SROS continues to assist the private sector, in their efforts to drive economic growth and create job opportunities through exports and import substitution. The portfolio of testing services established continues to be expanded to meet the needs of the Organisation's clients.

PHAMA
Pacific Horticultural & Agricultural Market Access Program

Funded by PHAMA, two laboratory technical specialists (Joy Oakly and Ryan Hunter) from Cawthron Institute in New Zealand conducted a three weeks in-house training in August 2013 to enhance the capacity of SROS technical staff on new microbiology tests and validation methods. The training was very successful and all new microbiology methods (*Vibrio cholera* in water, *Vibrio parahaemolyticus* and

Campylobacter in food and raw chicken) have been added on SROS's accredited testing scope. As Samoa's only accredited testing laboratory to test and certify food safety and quality standards, much of the training undertaken was aimed at strengthening the diagnostic services to determine compliance with food quality and/or food safety services. Under the PHAMA programme, SROS has benefitted immensely and is working to extend the scope of its accredited testing capabilities and build expertise to satisfy the accreditation requirements, to ensure that SROS have the capacity to answer the needs of those who require SROS technical services – primary producers, manufacturers and exporters.

For accreditation related services and technical staff safety purposes, SROS procured and installed a new Fume Hood (an extractor unit for toxic fumes) from Caliber Solution in NZ in October 2013 at the total value of about SAT$60,000.

In December 2013, SROS underwent a full IANZ audit assessment for both its chemistry and microbiology testing laboratories. The assessment team was lead by IANZ assessor Mr. Ian Laban and assisted by two technical experts in microbiology and chemistry. The outcome of the assessment was for SROS to continue with accreditation status in anticipation of addressing all corrective actions recommended by the assessors; with another follow-up assessment scheduled in June 2014.

SROS laboratories continue to participate in the inter-laboratory competency programme (ILCP) where accredited microbiological and chemical methods were tested for their reliability and accuracy. After the assessment and comparison to other international accredited laboratories, SROS achieved high standard and good results for macro-nutrients, general microbiology and pathogens analysis.

To satisfy all aspects of accreditation, the analytical instruments and supporting equipments need to be well maintained, functional and calibrated. For that purpose, Rod Cooper a senior service engineer and IT specialist from Shimadzu Scientific Instruments (Australia) and Luke Edkins from Calibration Services (New Zealand) visited SROS in March 2014. Mr Cooper visited for the annual maintenance and trainings for analytical instruments such as AAS, GC/GLC and HPLC, whilst Mr Edkins visited for annual calibration which he calibrated the muffle furnace, vacuum oven, dehydrating ovens, incubators and digesters. Mr. Cooper visited SROS again in May 2014 to install and commission the new Gas Chromatography/Mass Spectrometer (GC/MS) and conducted training for this analytical instrument. The GC/MS analysis is one of the recommended methods by the United Nations Office on Drugs and Crime (UNODC) for the identification and analysis of illegal hard drugs such as methamphetamine (or ice). The provision of this service will not only help speed up judiciary cases relating to hard drugs, but will add to the revenue streams of SROS. Although the GC/MS is useful for performing a wide range of tests, it is allocated for narcotics analysis only at this stage.

Apart from accredited tests, new test methods for chemistry (histamine and mercury in fish and fish products) need to be validated and verified to demonstrate that they are fit for purpose and provide good results for customers. Therefore, SROS is now participating in the FAPAS Proficiency Scheme and receiving samples for mercury and histamine analysis.

9.3 Bottled Water Monitoring programme with MOH

The on-going monitoring of bottled water for quality and safety during this financial year saw more than 90% of the bottled water products with zero counts for *Coliform* organisms and compliant with the Samoa National Drinking Water Standards.

9.4 Other technical services rendered

In October 2013, SROS received a request from MOH to test for Na salt levels in selected food items sold locally as cooked or processed. This project is collaboration between MOH and George Institute for Global Health in Australia. The main objective of this project is to monitor the current salt consumption patterns of our people and use the results to formulate strategies to help trim down the noticeably high salt content in food items that our people consume on a daily basis. Over 100 samples of various food items (2 replicates each) were received regularly for Na content measurements during this financial year. The project is now completed and the summary of results, a brief report and certificates of analysis (COAs) have been submitted to MOH for their purposes. Other samples received from clients in the private and public sectors for analysis during this financial year included food and food products, water and wastewater.

Corporate Services Unit (CSU) - Administration & Finance

The Administration and Finance Division is responsible for CSU and manages the Organisation's financial resources, necessary administrative and support services to the core output divisions, and oversight and coordination of the human resources of the Organisation.

The following sections highlight the administrative and financial work of the Organisation undertaken by the Administration and Finance Division including human resource matters.

10.1 Overview of Financial Performance and Financial Results for this Financial Year

10.1.1 Financial – Key Performance Measures

Revenue Streamline	**Amount**	**Cost Recoveries Target**
Technical Services	105,850	140,000
Biodiesel Sales	11,498	20,000
Sale of Breadfruit Flour	4,959	-
Consultancy Fees	8,345	-
Other Income	2,697	-
Total	**$133,349**	**$160,000**

The above table shows the different revenue streams SROS implemented in this financial year in order to achieve its targeted Cost Recoveries of $160,000. Although we note that SROS's collection fell short of its target by $26,651 or 17%, this is an improvement of 8% in collections when compared to $123,059 from the previous year. This is excluding SROS's ability to secure additional funding through grant funding assistance.

10.1.2 Total Revenue

Total revenue received for the year was $3.99M, of which 86% comprised of Government Grant ($3.43M) and remaining 14% ($0.56M) in Other Income. The reduction in overall Income for the Organisation is mainly due to the one off project funds for the Coconut Oil Refinement which was introduced in the preceding year. We note however that there were additional resources from Government for the set up of the new Commercial Technical Services Division, i.e. the procurement of the GC/MS, specialized analytical machine as well as funds for the Government's 3% salary increase.

Details of other income received and generated during the year are listed below:

	FY2013/2014	FY2012/2013
Turkey Grant - Ethanol Project	38,200	101,329
IUCN Biodiesel Funds	110,614	141,032
Avocado margarine	54,089	104,397
Coconut oil refinement	11,095	110,607
Technical Services	105,850	74,752
Secretariat of the Pacific Community	12,280	31,152
US Aid	-	11,149
Sales Biodiesel	11,498	10,230
Avocado oil	-	6,533
Republic of Korea funds - Fruit Wine	3,282	-
Turkey grant - Breadfruit project	94,177	-
PHAMA Frozen Taro Project	40,737	-
Consultany fees	8,345	-
Sales Breadfruit Flour - Gluten Free	4,959	-
Other income	66,855	392
TOTAL	**561,981**	**591,573**

We note from the above table a reduction of 5% in the overall "other income" as reflected in the Organisation's Statement of Income and Expenditure, which is mainly due to low utilization of project funds when compared to the previous year. It is also noted in the above table the activities of the new project funds that came through the Organisation during the year such as Fruit Wine project, Breadfruit (Pathogen) project and the PHAMA Frozen Taro project.

In light of the above it is important to note the yet unutilized portions of grant funds received and are classified as "Deferred Income" under current liability in the Balance Sheet and also disclosed as notes to the financial statements under Note 17, until such time funds are fully utilized for research project purposes. These include:

Deferred Income:

- $113,131 - SPC Soil Biodiversity consultancy
- $278,229 - Coconut Oil Refinement project
- $235,545 - Avocado Margarine project
- $13,171 - Gluten Free Breadfruit Flour
- $15,713 - PHAMA Frozen Taro Project
- ($518) - USAID grant funds for fish analysis project

  $655,271 - Total Deferred Income

Project Funds held with MOF:

- $62,532 - Bioethanol Project - Turkey Grant
- $107,147 - IUCN biodiesel Project
- $23,016 - Breadfruit Project – Turkey funds
- $308,165 - Fruit Wine Project – Republic of Korea

  $500,860 - Total Project Funds held with MOF

10.1.3 Total Expenditure

The overall total expenditure decreased by $65,671 when compared to the previous year expenditure which is due largely to the decrease in Depreciation costs of $234,666 and controlled utilization of Occupancy costs by $9,142. On the other hand we note the major increases in expenditure items are Personnel costs of $111,013 and other costs of $48,294 (mainly lab consumables).

The abovementioned expenditure category increases are elaborated as follows:

- The $111,013 increase in Personnel Costs compared to the 2012/2013 financial year was mainly due to the increase of staff members, as well as the Government Salary and Wage increase.

- The $48,294 increase under other costs are mainly due to the individual items under Note 15 to the financial statements stating the increase in Lab Consumables, Freight Costs, Gas and Cleaning expenses, and capacity building of staff which is compensated via the drop in project expenses.

This financial year shows controlled spending for Occupancy Costs and Directors Fees and Board Expenses and a slight increase in Administrative Costs mainly for repairs and maintenance on plant and equipments.

Expenditure Details	FY2013/2014	FY2012/2013	Variance $$
Audit fees	8,004	8,004	-
Directors fees & board expenses	50,765	50,306	459
Provision for Bad Debts	7,319	-	7,319
Depreciation	853,161	1,087,827	(234,666)
Personnel costs	1,559,289	1,448,277	111,013
Occupancy costs	158,821	167,963	(9,142)
Administrative costs	651,942	640,889	11,053
Other costs	660,031	611,737	48,294
Total Expenditure	**$ 3,949,332**	**$ 4,015,003**	**$ (65,671)**

In view of the above, we continue to see a positive sight on revenues generated from our Commercial Technical Services Division ($105,850 from $74,752), as well as controlled overall expenditure reduced compared to the preceding year. 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.

10.1.4 Balance Sheet (BS) and Profit and Loss Statement Summary

The following table provides a snap shot of SROS's balance sheet and profit and loss statement positions with detailed notes outlined in the attached audited financial statements at the end of this report.

The achievement of SROS's target ratio of (current assets vs current liabilities) 2:1 at the end of the FY2013/2014 illustrating 2.3:1 as opposed to 1.7:1 in the previous year. This is mainly due to the increase in Current Assets for the Organisation during this period while the expenditure level is relatively the same. Not only we note the positive current ratio, but we also note a surplus of $45,233 for FY2013/2014. Although SROS has achieved its target current ratio it is determined to continue to find alternative revenue streams in order to secure funding for the Organisation's activities.

The increase portrayed in Current Assets in proportion to Current Liabilities is mainly due to the increase in debtors yet to receive outstanding dues, as well as an increase in cash and cash equivalent amounts through the Commercial Technical Services revenue collection (details are noted in the attached audited financial accounts at the end of this report).

PARTICULARS	ACTUALS FY2013/2014	ACTUALS FY2012/2013
Revenue	3,432,584	2,981,651
Other Income	561,981	591,573
Expenditure	3,949,332	4,015,003
Net Profit	**$ 45,233**	**$ (441,779)**
Current Assets	1,895,289	1,440,461
Total Assets	**$ 4,048,167**	**$ 4,026,997**
Current Liabilities	814,707	838,770
Working capital	**$ 1,080,582**	**$ 601,691**
Current Ratio	2.3:1	1.7:1
No of employees	51	44

10.2 Capital Expenditure and Projects for this Financial Year

Overall we note an increase of 10% in Capital investment for the Organisation this financial year 2013/2014 when compared to the previous year. The major capital investment made in this financial year is under Laboratory Equipments totaling $358,404; this included the procurement of the GC/MS to the amount of $137,182.20 and its associated costs for installation which is a specialized analytical machine under the Commercial Technical Services Division. It also includes new laboratory equipments such as the fume cupboard costing $55,210.95, DNA extraction equipment for the phylogenetic project costing $46,668.12, Humidity Cabinet for research purposes costing $31,134.45, Oil extraction machine (KK40) costing $23,089.51, Oil Expellers costing $16,847.00, Oxybaby Gas Analyser costing $12,913.44, Safety showers and eye washers costing $8,065.14, Fruit and Crop firmness tester costing $7,775.79, Microplate reader costing $5,622.70, Electrode pH meter costing $5,103.78, Chest Freezer and Fridge costing $3,430, Ultrasonic water bath costing $2,954.47, Desicator cabinet costing $2,186.25, and a Double wok burner for Plant and Food Technology Division for testing on crops costing $220.00.

PARTICULARS	ACTUALS FY2013/2014	ACTUALS FY2012/2013	VARIANCE
Building	23,465	20,961	2,504
Furniture and Fittings	12,772	12,162	610
Laboratory Equipment	358,404	257,568	100,836
Office & other Equipment	24,861	92,359	(67,498)
Totals	**$ 419,501**	**$ 383,050**	**$ 36,451**

Other capital additions recorded include:

- $24,861 for Office and Other Equipments: these were mainly for 6 computer sets, 2 deskjet printers and 2 laptops for staff and Management and Volunteer. It also includes a new camera with memory card for the Plant and Food Technology Division;
- $23,465 for Building costs: building an extension for Office space due to the increase in number of staff recruited, and;
- $12,772 for furniture and fitting costs: these were mainly the procurement of furniture for new staff members and safety wear for maintenance staff.

10.3 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:

20–29 July 2013: CEO Tilafono David Hunter was a member of the Hon Minister of MNRE/STEC/SROS's delegation that visited the People's Republic of China as per invitation from the Chinese Government. The official visit included meetings with relevant Chinese Government officials on important matters relating to climate change, renewable energy and energy efficiency, and site visits to key manufacturers and suppliers of renewable energy technologies (e.g. wind turbines) and energy efficient appliances (e.g., air condition units).

19–21 September 2013: CEO Tilafono David Hunter was a member of the Hon Minister of Finance/NECC Chairman's delegation that visited the Green Distillation Technologies (GDT) Plant in Warren, NSW, Australia. The visit was funded by the SPREP-coordinated PIGGAREP programme. The purpose of the visit was to inspect the GDT process of destructive distillation involving a pyrolysis based process, which GDT has refined technical concepts during two years of pilot plant operations to produce oil and carbon from used tires. The process has been made to work on a great variety of agricultural crop wastes, and GDT are confident that there should be applicability of the concept to coconuts, coconut waste (husks, coir, shells, fronds) as well as coconut lumber (from felled coconut palms that are no longer producing nuts). To explore further the potential opportunity for Samoa to engage in such a technology, a business case will be developed by GDT in cooperation with nominated representatives from Samoa, and if endorsed by NECC and subsequently by Cabinet, a formal application for project funding assistance will be sought from appropriate agencies and international programs such as PIGGAREP and SIDS Dock.

25–26 September 2013: MOH invited SROS to present and assist in demonstrating how to calibrate equipment for their staff. Faataga Faataga, Professional Officer of Commercial Technical Services Division was the SROS representative. The training involved calibrating pH meters, thermometers and portable meters, and a site visit to factories.

30 September-4 October 2013: Manager and Research Scientist of Commercial Technical Services Division, Lilo Samani Tupufia and Phillip Reti, respectively, attended one-week training on drug identification and analysis at ESR, New Zealand, as part of the SROS Narcotics Laboratory human resource development to ensure long term stability of the services rendered by the SROS authorized analysts under the Narcotics Act 1967.

11–22 November 2013: Manager and Principal Scientist of Plant and Food Technology Division, Tuimaseve Kuinimeri Asora and Annie Toailoa, respectively, participated in a two weeks intensive training at Victoria University of Wellington (VUW) in New Zealand, to learn molecular research techniques. The training focused around two techniques for DNA extraction namely the chemical and boiling extraction methods.

14–16 November 2013: Manager of Industrial Research Division, Gaufa Salesa-Fetu, attended the SAME Trade Show that was held in Auckland, New Zealand at the Mangere Arts Centre. The Samoa delegation was led by the Hon Deputy Prime Minister with 27 local businesses in attendance at the show. The theme of the mission was to promote "Buy Samoa Made" Goods and Services and promote Samoa's latest Exports. The Trade Show has identified areas for improvement with close working relationship with the Government of Samoa especially in regards to having a point of contact for Samoan Made Goods and Services in New Zealand, the need for consistency in supply and support for increasing capacity for various agriculture crops and be in conformance with New Zealand quarantine issues among other things such as the need for investment to support export industries from Samoa.

16–24 January 2014: CEO Tilafono David Hunter attended the 4th IRENA Assembly held in Abu Dhabi United Arab Emirates as part of the Hon Minister of MNRE/STEC/SROS's delegation.

31 January 2014: Senior Research Scientist of Industrial Research Division, Notise Faumuina, was awarded a scholarship at VUW under the MOA signed between VUW and SROS. This scholarship will enable him to complete a Graduate Diploma in Science for one year. He is the second SROS employee to be awarded under this scheme to further knowledge, academic qualification and development.

17–21 February 2014: Administration Officer, Janet Scanlan, was nominated to attend a "Customer service skills for Frontline Staff" program that was a five day course hosted by Chamber of Commerce short training programme. This was important training to improve service skills to become the best Customer Service officer to represent SROS at the frontline.

31 March–4 April 2014: Manager and Research Scientist of Commercial Technical Services Division, Pousui Dr Fiame Leo and Luanda Epa, respectively, attended the "Alcohol and/or Other Drugs Treatment Workshop' held at Court House, Mulinu'u, to discuss and understand various aspects and key components in the establishment of procedures to handle cases relating to Alcohol and Other Drugs, and their associated treatment options. The SROS Narcotics Laboratory is recognized as the main laboratory for analyzing drugs and alcohol in Samoa.

1–2 April 2014: Two of SROS Research Scientists, Luaao Faatili of Industrial Research Division and Moon Chan of Commercial Technical Services Division attended a two day course on Management System Internal Auditor that was coordinated by SAME and held at Insel Fehmarn Hotel. The course covered topics on planning, implementation and effective report writing.

12–17 May 2014: Pousui Dr Fiame Leo, Manager of Commercial Technical Services Division attended a Laboratory Quality Management course in Auckland, New Zealand, at the New Zealand Quality College. This was one of the criteria set out by IANZ for conducting accredited testing and analysis at SROS.

6–26 June 2014: Semua Militini Tagoai, Professional Officer of Plant and Food Technology Division attended the JUNCAO Technology for Latin American, Caribbean and South Pacific Region seminar held in Fuzhou, Fujian Province, China.

17–20 June 2014: Gaufa Salesa Fetu, Manager of Industrial Research Division attended the Breadfruit Initiative Organizing and planning meetings hosted by the University of Hawaii's Pacific Business Center Program (PBCP) in Honolulu and Kona, Hawaii. The meeting discussions focused on plans to help progress this project since the Two Samoas 'Ulu Summit held in American Samoa in December 2012.

10.4 Staff Movements during this Financial Year

10.4.1 Departures

- **18 October 2013:** Mrs Mere Aisake-Asi resigned from SROS as the Manager of Administration and Finance to take up a new job offer.

- **16 May 2014:** Mr Fetaomi Seve resigned from his duties as Driver after working for seven months to take up a position in the Ministry of Agriculture and Fisheries.

10.4.2 Appointments

- **9 July 2013:** Mrs Vanda Faasoa-Chang Ting was appointed to the position of Principal Research Scientist within the Environment and Renewable Energy Division. She was formerly the Senior Research Scientist for the same division.

- **10 July 2013:** Mrs Oiner Leutu Moa was promoted to the position of Research Scientist in the Environment and Renewable Energy Division. She was formerly the Technical Officer for the same division.

- **22 July 2013:** Mr Lilo Samani Tupufia was appointed to the position of Manager of the new Commercial Technical Services Division. He was formerly the Principal Scientist in the Environment and Renewable Energy Division.

- **29 July 2013:** Ms Agape Papalii Tautua was appointed to the position of Professional Officer in the Environment and Renewable Energy Division.

- **29 July 2013:** Mr Kilom Ishiguro was appointed to the position of Senior Research Scientist in the Environment and Renewable Energy Division.

- **1 October 2013:** Casuals appointed as Permanent Staff as per Cabinet Release dated 27th September 2013:

  Administration and Finance Division
  - Viona Faumuina – Office Assistance
  - Ioelu Lipine – Driver
  - Atoa Fuatai Tumaalii – Mainenance Assistance
  - Patrick Puleiai – Driver
  - Mulipola A Mila – Driver
  - Silipa Talimalo – Night Watchman
  - Tone Mareko – Cleaner
  - Gutu Tagiilima – Cleaner

  Environment and Renewable Energy Division
  - Losia Tema – Technical Assistant

  Industrial Research Division
  - Sesa Solofuti – Technical Assistant

  Plant and Food Technology Division
  - Seko Vaimoli – Technical Assistant ()

- **3 October 2013:** Fetaomi Seve was appointed as Driver for the Organisation in the Administration and Finance Division.

- **7 October 2013:** Mr Siope Pele was promoted to the Senior Research Scientist position in the Plant and Food Technology Division. He was formerly the Research Scientist for the same division.

- **18 October 2013:** Mr Phillip Reti was appointed to the Research Scientist position in the Commercial Technical Services Division. He was formerly the Professional Officer for the Environment and Renewable Energy Division.

- **18 October 2013:** Mr Faataga Faataga was appointed as the Professional Officer for the Commercial Technical Services Division. He was formerly the Technical Officer for the Plant and Food Technology Division.

- **21 October 2013:** Mr Alfram Nukuro was appointed as the Research Scientist in the Plant and Food Technology Division.

- **21 October 2013:** Mrs Helmy Sasulu was appointed as the Technical Services Officer in the Commercial Technical Services Division.

- **25 November 2013:** Mr Mamea Samuel Ieremia was appointed to the position of Manager for the Administration and Finance Division.

- **4 February 2014:** Mr Kenji Sakamoto, a Senior Volunteer from Japan under the Japan International Cooperation Agency (JICA) commenced his assignment with SROS in its Research and Development function.

- **18 March 2014:** Mrs Fauono Sina Mualia was appointed to the position of Business Development Specialist working directly under the Chief Executive Officer.

- **24 March 2014:** Mr Alesana Malo was appointed to the position of Professional Officer in the Industrial Research Division.

- **23 June 2014:** Mr Tiafau Anesone was appointed to the position of Driver in the Administration and Finance Division.

- **25 June 2014:** Mr Isamaeli Time was appointed to the position of Senior Research Scientist in the Environment and Renewable Energy Division.

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

FAAVAEI LE ATUA 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 2014 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 2014, and of its financial performance and cash flows for the year then ended; and

2. Complying with International Financial Reporting Standards.

Our audit was completed on the 29th October 2014 and our opinion is expressed as at that date.

Afele

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

Apia, Samoa
31 October 2014

Independent Auditor's Opinion

Betham&co
chartered accountants and business advisors

Independent Auditors Report
To the Controller and Auditor General
on 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 2014, 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 Responsibility of the Board of Directors for the Financial Report
The Board of Directors are 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 controls 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 controls 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:

a) giving a true and fair view of the financial position of the Scientific Research Organisation of Samoa as at 30 June 2014, and of its financial performance, cash flows and changes in equity for the year ended on that date; and
b) complying with International Financial Reporting Standards

Betham & Co
BETHAM & CO.
Chartered Accountants
Apia
Dated 29 October 2014

DIRECTOR'S REPORT

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
DIRECTOR'S REPORT
FOR THE YEAR ENDED 30 JUNE 2014

The Directors present their report together with the financial statements of the Scientific Research Organisation of Samoa for the year ended 30 June 2014 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
• Taulealeausumai Laavasa Malua	Director (from July - December 2013)
• Suluimalo Amataga Penaia	Director (from March 2014 - present)
• 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 2014.

(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 2014.

Operating Results

The net surplus for the year is **$ 45,233** (2013: Net (deficit) **$ (441,779)**)

Dated at _____ this _____ day of _____ . 2014.

Signature
Fonoti Perelini S. Perelini
Chairman

Apia, Samoa
29/10/14

Signature
Sulamanaia Nuuetolu Monitini Ott
Director

Apia, Samoa
29/10/2014.

MANAGEMENT'S REPORT

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
MANAGEMENT'S REPORT
FOR THE YEAR ENDED 30 JUNE 2014

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: 29/10/ , 2014.

Signature
Mamea Samuel Ieremia
Manager Administration & Finance

Apia, Samoa

Dated: 29/10 , 2014.

STATEMENT OF FINANCIAL POSITION

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2014

ACCUMULATED FUNDS	Notes	2014 SAT$	2013 SAT$
Opening balance		3,188,227	3,630,006
Add: Surplus / (Deficit)		45,233	(441,779)
Closing balance		**3,233,460**	**3,188,227**
Represented by:			
Current assets			
Cash and cash equivalent	3	1,380,476	1,122,337
Other receivables and prepayments	4	299,873	54,961
Stock on hand	5	214,940	263,163
Total current assets		1,895,289	1,440,461
Current liabilities			
Other payables and accruals	6	90,964	71,877
Allowance for staff benefits	7	68,472	63,041
Deferred income	8	655,271	703,852
Total current liabilities		814,707	838,770
Working capital		1,080,582	601,691
Non Current assets			
Property, plant and equipment	9	2,152,878	2,586,536
Net assets		**3,233,460**	**3,188,227**

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 2014

	Notes	2014 SAT$	2013 SAT$
INCOME			
Grants from Government of Samoa	10	3,432,584	2,981,651
Other income	11	561,981	591,573
Total income		**3,994,565**	**3,573,224**
EXPENDITURES			
Audit fees - current		8,004	8,004
Directors fees & board expenses		50,765	50,306
Provision for Bad Debts		7,319	-
Depreciation	9	853,161	1,087,827
Personnel costs	12	1,559,289	1,448,277
Occupancy costs	13	158,821	167,963
Administrative costs	14	651,942	640,889
Other costs	15	660,031	611,737
Total expenditures		**3,949,332**	**4,015,003**
Net Surplus / (Deficit)		**45,233**	**(441,779)**

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 2014

	Capital SAT$	Accumulated Fund SAT$	Total SAT$
2013			
Balance as at 1 July 2012		3,630,006	3,630,006
Less: (Deficit)	-	(441,779)	**(441,779)**
Balance as at 30 June 2013	**-**	**3,188,227**	**3,188,227**
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**

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 FLOW
FOR THE YEAR ENDED 30 JUNE 2014

		Notes	2014 SAT$	2013 SAT$
Cash flows from/(to) operating activities				
Cash received from Government of Samoa			3,256,626	2,981,651
Cash received from the Republic of Turkey			100,732	90,597
Cash received from IUCN			9,409	12,417
Cash received from	- Avocado oil		-	6,533
	- Secretariat of the Pacific Community		-	122,766
	- Coconut oil refinement fund		1,390	400,000
	- Avocado margarine fund		-	393,965
	- Technical services		93,612	74,752
	- Biodiesel sales		10,816	10,230
	- Republic of Korea funds - Fruit Wine		3,282	-
	- Turkey grant - Breadfruit project		94,177	-
	- PHAMA		40,736	-
	- Consultancy services		8,345	-
	- Other income		2,697	392
Cash paid for expenses			(2,944,180)	(2,919,823)
Net cash flow by operating activities			**677,642**	**1,173,480**
Cash flows from/(to) investing activities				
Purchase of property, plant and equipment		**9**	(419,501)	(351,716)
Net cash used by investing activities			**(419,501)**	**(351,716)**
Net increase/(decrease) in cash			258,140	821,764
Cash and cash equivalent at the beginning			1,122,337	300,573
Cash and cash equivalent at the end		**3**	**1,380,476**	**1,122,337**

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 2014

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 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%
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 to be completed in 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.

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2014

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		**2014**	**2013**
		SAT$	**SAT$**
Petty cash		500	500
Cash at ANZ Bank (Samoa) Limited - main account		433,853	181,656
Cash at Westpac Bank Ltd - Technical Services		106,447	
ANZ Bank (Samoa) Limited: project account	- US Embassy Aid	(518)	(518)
	- Secretariat of the Pacific Community	113,131	125,411
	- Coconut Oil Refinement Fund	278,229	289,324
	- Avocado Margarine Fund	235,545	289,635
	- Others	213,289	236,329
		1,380,476	**1,122,337**

4. OTHER RECEIVABLES & PREPAYMENTS		
Prepaid insurance and other prepayments	23,330	18,182
Debtors	283,862	36,779
Less: Provision for Doubtful Debts	(7,319)	-
	299,873	**54,961**

5. STOCK ON HAND		
Lab consumables on hand	214,940	263,163
	214,940	**263,163**

6. OTHER PAYABLES & ACCRUALS		
Trade payables	23,117	-
Accrued expenses	36,799	54,914
Accounting fees	-	2,157
Audit fees	8,004	8,004
Electricity	22,999	6,772
Land lease	45	30
	90,964	**71,877**

7. ALLOWANCE FOR STAFF BENEFITS		
Staff annual leave entitlements	68,472	63,041
Total allowance for staff benefits	**68,472**	**63,041**
Movement for Allowance of Staff Benefits		
Balance at beginning of the year	63,041	70,041
Additional allowance during the year	10,897	23,975
Utilised during the year	(5,466)	(30,975)
Balance at year end	**68,472**	**63,041**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2014

8. DEFERRED INCOME

	2014 SAT$	2013 SAT$
US Aid	(518)	(518)
Secretariat of the Pacific Community	113,131	125,411
Coconut Oil Refinement	278,229	289,324
Avocado Margarine	235,545	289,635
Gluten Free Breadfruit Flour	13,171	-
PHAMA - Frozen Taro Project	15,713	-
	655,271	**703,852**

9. PROPERTY, PLANT & EQUIPMENT

Cost	Buildings SAT$	Furniture & Fittings SAT$	Laboratory Equipment SAT$	Office Equipment SAT$	Motor vehicles SAT$	TOTAL SAT$
1 July 2013	2,281,051	217,658	3,256,762	1,306,945	292,483	7,354,899
Additions	23,465	12,772	358,404	24,861	-	419,501
Disposals	-	-	-	-	-	-
At 30 June 2014	2,304,516	230,430	3,615,166	1,331,806	292,483	7,774,400
Accumulated depreciation						
1 July 2013	417,022	188,881	2,597,104	1,272,871	292,483	4,768,361
Depreciation	114,444	29,892	672,566	36,259	-	853,161
Disposals	-	-	-	-	-	-
At 30 June 2014	531,466	218,773	3,269,670	1,309,130	292,483	5,621,522
Carrying amount						
30 June 2013	**1,864,029**	**28,777**	**659,658**	**34,074**	**-**	**2,586,538**
30 June 2014	**1,773,050**	**11,657**	**345,496**	**22,676**	**-**	**2,152,878**

10. GRANTS FROM GOVERNMENT OF SAMOA

Cash received from Ministry of Finance	**3,432,584**	**2,981,651**

11. OTHER INCOME

Turkey Grant - Ethanol Project	38,200	101,329
IUCN Biodiesel Funds	110,614	141,032
Avocado margarine	54,089	104,397
Coconut oil refinement	11,095	110,607
Technical Services	105,850	74,752
Secretariat of the Pacific Community	12,280	31,152
US Aid	-	11,149
Sales Biodiesel	11,498	10,230
Avocado oil	-	6,533
Republic of Korea funds - Fruit Wine	3,282	-
Turkey grant - Breadfruit project	94,177	-
PHAMA Frozen Taro Project	40,737	-
Consultany fees	8,345	-
Sales Breadfruit Flour - Gluten Free	4,959	-
Other income	66,855	392
	561,981	**591,573**

12. PERSONNEL COSTS

Salaries and wages	1,469,908	1,367,048
NPF 5% contributions	75,364	67,266
ACC 1% contributions	14,017	13,963
	1,559,289	**1,448,277**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2014

	2014 SAT$	2013 SAT$
13. OCCUPANCY COSTS		
Electricity	158,806	167,948
Land lease	15	15
	158,821	**167,963**
14. ADMINISTRATIVE COSTS		
Advertising and promotions	49,901	56,753
Accounting fees - current year	2,875	8,626
Bank charges	2,457	2,495
Internet charges	55,481	39,313
Fees and registrations	400	2,294
Car rental	2,550	2,440
Fuel & oil	58,455	49,148
Printing and stationery	82,023	73,726
Repairs and maintenance - motor vehicles	36,228	14,969
Repairs and maintenance - building	17,679	41,092
Repairs and maintenance - office equipment	13,583	43,126
Repairs and maintenance - furniture and fittings	3,527	8,039
Repairs and maintenance - plant & equipments	27,710	-
Subscriptions	1,030	1,730
Telephone, fax and postages	24,553	14,112
Travel & accomodation	86,922	95,292
Water supplies	9,208	4,756
Insurance	69,798	86,649
Local travel	1,025	2,831
Consultancy fees	67,112	49,929
General expenses	39,425	43,569
	651,942	**640,889**
15. OTHER COSTS		
Lab consumables	223,360	143,729
Freight & handling Costs	27,079	-
Accreditation project costs	47,128	55,722
Soil bio project expense	4,423	61,836
Avocado margarine	18,227	26,553
Jatropha project	61,521	35,247
Biodiesel project	68,724	15,214
Other projects costs	21,983	119,916
Plant hire	3,236	3,236
Interviewing panel allowances	4,633	3,990
Gas	94,940	84,983
Clothing allowance	5,608	16,562
Cleaning expenses	25,521	11,410
Staff training	29,301	10,893
Telephone allowances	3,600	3,600
CEO & office catering	20,748	18,846
	660,031	**611,737**

THE SCIENTIFIC RESEARCH ORGANISATION OF SAMOA
NOTES TO FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2013

16 RELATED PARTY DISCLOSURES	2014 SAT$	2013 SAT$
i. Salaries and short-term employee benefits	643,798	516,288

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

ii. Board expenses	3,760	2,131

Balance represents board expenses for meetings held throughout the year.

iii. Directors' fees	28,900	34,000
iv. Board of directors allowances	18,105	14,175

The above amount consist of sitting allowance & annual Directors fees paid to eligible Directors who include; Fonoti Perelini Perelini, 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.

17 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 30/06/2013	Funds received	Funds expended	Balance as at 30/06/2014
Turkey Grant (Ethanol Project)	100,732	-	38,200	62,532
IUCN Biodiesel Funds - MNRE	177,824	-	70,677	107,147
Turkey Funds - Breadfruit Project	-	117,193	94,177	23,016
Republic of Korea - Fruit Wine Project	-	311,447	3,282	308,165
Total Project Grants held at MOF	**278,556**	**428,640**	**206,336**	**500,860**

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.
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.

18 CAPITAL COMMITMENTS

The Ministry of Finance has approved a budget of SAT$3.4 million (2013: SAT$3.8 million) for the period ended 30 June 2014. Capital costs included in this Budget was $150,000 for the Gas Chromatograph Mass Spectrometer (GCMS) analytical machine. (2013: Nil)

19 CONTINGENT LIABILITIES

The directors are not aware of any contingent liabilities for the period ended 30 June 2014. (2013: SAT$nil).

20 EVENTS OCURRING AFTER BALANCE SHEET DATE

There are no events subsequent to balance date which require recognition or disclosure in this financial statement. (2013: NIL).

21 APPROVAL OF FINANCIAL STATEMENTS

The board of directors approved the financial statements of the Organisation on 29 / 10 / 2014

Annex (Analysis of Financial Performance Measures)

Table of Key Performance Measures

Performance Measures	This Year Actuals 2013-2014	Last Year Actuals 2012-2013	Plan This Year 2014-2015	Comments
Revenue	3,432,584	2,981,651	3,266,703	The increase in Revenue or Government Grant was mainly due to the procurement of the GC/MS a specialized analytical machine and the setup of the new Output/Division – Commercial Technical Services Division such as Personnel Staffing Costs and Operating Costs for activities.
Other Income	561,981	591,573	139,923 (cost recoveries target)	We note the decrease of 5% in the overall Other Income mainly due to the low utilization of project funds tied under Deferred Income, although we note an increase in Income received via the Commercial Technical Services Division of $105,850 compared to $74,752 in the previous year.
Total Revenue	$3,994,565	$3,573,224	$3,405,736	
Expenditure (Personnel, operating & depreciation)	3,949,332	4,015,003	4,347,813	This shows a slight decrease of just below 2% or $65,671, we do note the decrease in Depreciation and controlled utilization of Occupancy costs despite the increase in its monthly bill by EPC in the last five months of the FY2013/2014.
Surplus/(Deficit)	45,233	(441,779)	(495,025)	The surplus achieved in this FY2013/2014 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	1,895,289	1,440,461	2,370,048	Increased current assets are the result of increased cash & project fund balance held in bank account.
Total Assets	$4,048,167	$4,026,997	$3,383,574	
Current Liabilities	814,707	838,770	895,497	The slight decrease in Current Liabilities is due to the reduction of project funds being utilized and recorded as Deferred Income.