

2025

**Pacific Soils Partnership (PSP)–
Consolidated Report under GSP 6 Action
Areas**

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1. Introduction

The Pacific Soils Partnership (PSP) hosted by the Pacific Community (SPC) presents this consolidated report highlighting collaborative soil initiatives across the Pacific region under the Global Soil Partnership (GSP) Action Framework 2022-2030.

Working closely with Pacific Island Countries and Territories (PICTs), the PSP network has made significant progress in raising awareness of the six GSP action areas and their vital importance for sustainable soil management, livelihood resilience, and food security. Across our region, soils face mounting pressures from climate change, land degradation, and unsustainable practices. The initiatives reported here - including farmer training programs, research trials, and comprehensive soil monitoring - exemplify how PSP members are translating global frameworks into practical, locally relevant solutions.

This report showcases achievements from Australia, New Zealand, Fiji and Tonga, with SPC's work in serving as a model for regional implementation. Our activities range from SPC's Soil Doctors Program to Fiji's mobile soil testing labs, New Zealand's cutting-edge carbon monitoring, Tonga's pioneering national soil strategy and Australia launching its National Soil Strategy and Action Plan. Together, these efforts demonstrate the Pacific's collective commitment to safeguarding our soils through sciencebased policies, farmer-centric programs, and innovative regional cooperation.

2. PSP's contributions to the six action areas of the GSP Action Framework 2022-2030

2.1 Action area 1: Sustainably manage and restore soils for the provision of ecosystem services.

2.1.1 Australia

The Natural Heritage Trust (NHT) is the Australian Government's long running investment in sustainable agriculture, environmental protection and natural resource management. Under the NHT, the Climate-Smart Agriculture Program is driving agricultural productivity, competitiveness and sustainability by supporting farmers and the agriculture sector to adopt climate-smart practices that manage emissions, build resilience to climate change, improve soil health, and protect natural capital.

2.1.2 New Zealand

Impacts on freshwater health is still a big driver on farm management, where most catchments now have targets for Freshwater health and loss of contaminants from farms. Farm Plans are also increasing requirement from export companies. Soil management is an important component, particularly around nutrient budgets and actions to reduce leaching and/or runoff of nitrogen, phosphorus, E. coli and sediment loss. A large research programme has been funded to study if mosaics of trees in rural landscapes can help reach New Zealand's carbon targets. An introduction article is [here](#) and webinar on the programme is available [Here](#) – How can small clusters of trees add value to rural landscapes?

Erosion management continues to be a high priority, particularly in response to the impacts of cyclone Gabrielle in February 2023. Research is ongoing in relation to understanding the relative erosion susceptibility of different catchments, and how to smarter target erosion management. A summary of

a recently completed research programme is available at [Smarter Targeting of Erosion Control \(STEC\)](#)
» [Manaaki Whenua \(landcareresearch.co.nz\)](#)

2.1.3 Fiji

Fiji has implemented transformative initiatives to improve soil health and agricultural sustainability. The Mobile Soil Testing Laboratory Program, launched in 2020, represents a major advancement in soil management. Supported by two mobile labs donated by the Indian High Commission in 2023, this program provides on-site soil analysis services directly to farmers across all divisions. The program focuses on:

- Conducting comprehensive soil tests for pH, nutrients, and organic matter
- Providing tailored fertilizer recommendations through Soil Health Cards Additionally, the Organic Research Program promotes sustainable practices by:
 - Training farmers in compost-making techniques
 - Distributing free bacterium cultures for soil enrichment
 - Conducting field trials of biofertilizers

2.1.4 Tonga

Tonga is implementing critical initiatives to address soil degradation and enhance agricultural sustainability. The Taro Salt Tolerance Trial (TSTT), conducted in partnership with the Australian National University (ANU), examines crop resilience to saline conditions - a growing concern for coastal agriculture. Simultaneously, the Fertilizer Trial in Low-Fertility Soils (with CSIRO) tests innovative tarocorn intercropping systems to improve:

- Soil organic carbon levels through crop residue management
- Nutrient cycling efficiency
- Farm system diversification

The Organic Herbicide Trial (with SPC) compares chemical and organic weed control methods, providing farmers with sustainable alternatives.

2.1.5 Pacific Community (SPC)

SPC conducted critical research trials on fertilizer optimization for taro production in Muaniweni, Fiji. The trials compared organic and inorganic amendments at varying application rates with observatory results showing good vegetative growth in plots receiving balanced fertilization. These findings and the yield data after harvesting will inform the development of Fiji-specific nutrient management guidelines to enhance productivity while minimizing environmental impacts.

2.2 Action Area 2: Strengthen Soil Governance

2.2.1 Australia

The Australian Government released the National Soil Strategy in May 2021 in recognition of the crucial role soil plays in climate resilience and agriculture productivity. The key governance structure for the strategy is the National Soil Strategy Implementation Steering Committee (NSSISC).

The National Soil Action Plan was released in November 2023 as the first action plan under the 20-year strategy. The action plan commits to action and investment on Australia's soil across the 4 priority areas: Measurement, Strategy, Adoption and Capacity. Bilateral partnerships with state and territory

governments are helping to deliver nationally important and locally appropriate soil related activities to address these priority areas.

2.2.2 New Zealand

NZ released in October 2022 [legislation](#) to protect highly versatile land for food production. The legislation prevents further fragmentation for rural residential expansion and also provides a series of rigorous tests for future urban expansion, to direct urban expansion towards less-versatile land.

In response to Cyclone Gabrielle a [Government enquiry](#) was conducted, with one aspect looking at the appropriateness of land use and management in relation to erosion impacts. The inquiry provided a suite of recommendations on improving land management for resilience to future extreme weather events.

2.2.3 Fiji

Fiji is enhancing its soil governance framework through strategic partnerships and policy development. The ACIAR Soil Management Project (SLAM/2020/139), implemented in collaboration with CSIRO and SPC, is strengthening Fiji's soil information systems by:

- Conducting systematic soil surveys to update national soil databases

The Ministry of Agriculture and Waterways has institutionalized soil health monitoring through:

- Proficiency testing for the Agricultural Chemistry Laboratory
- Standardized protocols for soil sampling and analysis

2.2.4 Tonga

Tonga is developing its first National Soil Strategy. This strategy addresses:

- Downward spiral of soil fertility
- Rising agricultural machinery use and chemical inputs
- Declining soil fertility from continuous tillage
- Need for standardized soil management protocols

2.2.5 Pacific Community (SPC)

SPC collaborated closely with CSIRO and Fiji's Ministry of Agriculture and Waterways to standardize soil testing protocols and integrate research findings into national agricultural policies. The ongoing Muaniweni soil survey will establish the first comprehensive baseline dataset for the area, supporting evidence-based decision making at both farm and policy levels.

2.3 Action Area 3: Promote Knowledge and Literacy on Soils

2.3.1 Australia

The National Soil Action Plan (2023-2028) identifies the development needs of the soil workforce and capabilities needed to meet current and future challenges for Australia and the Pacific.

The Australian Government is continuing to support a range of programs that promote knowledge and literacy on soil, including:

- The Regional Soil Coordinators which facilitate soil extension services.
- A Soil Extension Community of Practice which promotes soil knowledge-sharing in sustainable land management.
- A Soil Science Challenge Grants program that supports universities to research critical gaps in soil hydrology, soil carbon dynamics, soil nutrient uptake, and soil/root interface by providing 4-year research grants.
- The National Soil Carbon Innovation Challenge which provides grants to support research, development and deployment of reliable, more rapid and lower cost soil carbon estimation technologies and models.
- The Carbon Farming Outreach Program which supports farmers and land managers in making decisions to reduce emissions and store carbon, including demonstrating the benefits of improved land use practices for soil health.

Soil Science Australia continues to deliver two industry accreditations, a Certified Professional Soil Scientist Accreditation, and an accreditation and training package for Registered Soil Practitioners, which was developed with funding from the Australian Government.

2.3.2 New Zealand

The public website for the NZ soil information system, S-map Online, continues to be extensively used, alongside web services that directly ‘feed’ soil data and information into different farmer decisionsupport tools. The more general Soils Portal website also has high usage, containing an introduction to a wide range of topics and information resources. Other websites include the Land resources Portal (covering Land Use Capability assessment) and Antarctic Soil Explorer, documenting NZ’s long-standing Antarctic soil research activities dating back to the 1950’s. This website covers not just the soil data, but a wealth of video’s, interviews and photos of pioneering Antarctic soil scientists.

2.3.3 Fiji

Fiji has implemented a comprehensive capacity development program targeting both scientific professionals and farming communities to strengthen soil knowledge across all levels. At the institutional level, four chemistry staff members completed Fundamental Soil Science training at Fiji National University in 2024, while two specialists enhanced their expertise through advanced courses in New Zealand, including Soil Data Interpretation and ASPAC Laboratory training.

For farmer education, the Ministry of Agriculture conducted practical training sessions in 2024 focused on proper soil sampling techniques, ensuring accurate data collection at the grassroots level. Participation in innovative Soil Doctor Program has created a network of farmer-educators who disseminate soil management knowledge within their communities. These efforts are complemented by the distribution of easy-to-understand educational materials that explain soil health card results, enabling farmers to make informed decisions about their land.

2.3.4 Tonga

Tonga is building technical capacity through targeted training programs:

- Two lab technicians completed advanced training at CSIRO's Canberra laboratory (2023)
- One staff member attended Fundamental Soil Science training at Fiji National University (2024)

The revival of Tonga's Soil Analytical Laboratory includes comprehensive knowledge transfer:

- Planned training in New Zealand by Maanaki Whenua Landcare
- Technical exchanges with Chinese soil experts
- Equipment familiarization for refurbished facilities

2.3.5 Pacific Community (SPC)

Our capacity building efforts included training stakeholders (farmers and extension officers) through the Soil Doctors program. SPC through ACIAR funding conducted 4 Soil Doctors training where participants gained practical skills in soil sampling, analysis and interpretation, creating a network of local soil champions. These trainings were complemented by farmer-friendly guides and digital resources hosted on the Pacific Soils Portal.

2.4 Action Area 4: Promote Awareness Raising and Advocacy on Soil Health

2.4.1 Australia

The Australian Government supports the Pacific Soil Partnership Coordinator position within the Pacific Community (SPC) to provide regional-level leadership on soil health in the Pacific. In addition, Australia collaborates with New Zealand to host the biennial NZ-AUS Soil Conference, fostering crossborder knowledge exchange and innovation in soil science.

With a strengthened Pacific Soils Partnership (PSP) network, Pacific Island Countries and Territories (PICTs) actively participated in a week-long soils workshop and conference in Rotorua, New Zealand. This event brought together researchers, policymakers, and practitioners to discuss emerging challenges and solutions in soil health, promoting regional cooperation and knowledge-sharing

Australia also actively participates in World Soil Day celebrations (5 December) each year, funding events such as workshops, field demonstrations, and public campaigns to highlight the importance of healthy soils for food security, climate resilience, and ecosystem sustainability. These initiatives engage diverse stakeholders, including farmers, students, and Indigenous communities, to amplify awareness and advocacy for soil health.

2.4.2 New Zealand

An area of strong interest over the last couple of years has been on the application of regenerative farming approaches in the New Zealand context, with soil health benefits one of the drivers of interest. The Government has co-funded, with the farming sector, multi-year farm-scale programmes to compare conventional to regenerative systems, aiming to both understand the nature of any potential benefits in the NZ context. There is considerable interest across the farming sector, being an ongoing topic of discussion at farm field days and other extension activities. A summary can be found [here](#).

2.4.3 Fiji

Fiji has implemented innovative outreach programs to raise awareness about soil health:

Soil Health Card Initiative:

- Distributed 815 cards in 2024 (Northern: 599, Central: 93, Eastern: 43, Western: 80)
- Cards provide personalized soil management recommendations

Community Engagement:

- Regular field visits at demonstration/research plots

- Accommodating school visits to promote soil education World Soil Day Celebrations:
- Participating in annual events featuring soil testing demonstrations and farmer testimonials

2.4.4 Tonga

Tonga is revitalizing its soil health advocacy through:

- Laboratory Revival Project: The renovated soil lab serves as a visible symbol of commitment to soil health, with roof replacement by China Aid (February 2024) and equipment upgrades
- Post-Volcanic Eruption Survey: The 2022 national soil survey (funded by MFAT) highlighted soil challenges and solutions
- Farmer Engagement: Demonstration plots showcase research findings to agricultural communities

2.4.5 Pacific Community (SPC)

SPC through ACIAR funding marked World Soil Day 2024 with a major event in Taveuni, Fiji, engaging more than 100 farmers, researchers and extension officers through hands-on demonstrations and discussions about soil's vital role in food security. The celebration emphasized practical conservation techniques like Agro forestry, composting and reduced tillage with participants reporting increased understanding of sustainable practices.

2.5 Action Area 5: Assess, Map, and Monitor Soil Health in a Harmonized Way

2.5.1 Australia

The Australian Government continues to show its support to the measurement, monitoring, mapping, reporting and sharing of soil state and trend information. Investments include:

- The design and delivery of a National Soil Monitoring Program and continued development of the Australian National Soil Information System, to support stakeholders to make evidence-based decisions to improve soil health at a range of scales.
- The Soil Carbon Data Program which aims to support improved use and accessibility of soil carbon data from a range of land management practices.
- The Terrestrial Ecosystem Research Network (TERN) to monitor and understand changes to Australia's environment and climate and enable predictions of future risks.

The Australian Government continues to support the capabilities needed in our region to improve soil management. Projects include:

- Pacific Soil Portal Phase 2, where capabilities are being developed to deliver new and improved soil information streams, enabled by cost-effective, modern soil information systems.
- Revitalising the Papua New Guinea Resource Information System (PNGRIS) to deliver improved soil and land data for step-change advancements to the country's integrated land use planning capability.

2.5.2 New Zealand

NZ is continuing its soil quality monitoring programme, initiated and co-ordinated at the regional Government level (started in 1996). This data feeds into the national [State of the Environment](#)

[reporting](#) as a national environmental indicator. The latest national State of the Environment report on land was published in 2024, with a number of land indicators reported on. This report is available [here](#).

Benchmark sampling of the 500 sites for the National Soil Carbon Monitoring programme for agricultural land has also been completed. The second round of resampling is now underway.

2.5.3 Fiji

Fiji is integrating its soil monitoring system that combines field research, advanced technology, and regional collaboration. This serves as the foundation, systematically collecting soil data through both mobile laboratories and fixed testing facilities while adhering to standardized international protocols. This data will actively contribute to the regional Pacific Soils Portal, enhancing knowledge sharing across the Pacific.

In collaboration with CSIRO and SPC, two research sites were established; 1. Muaniweni for taro and 2. Nabitu for vegetables, to track critical soil health indicators including carbon dynamics, nutrient cycling patterns, and crop responses to various agricultural inputs. The Muaniweni site is undergoing soil survey to maintain up-to-date baseline data. The system incorporates cutting-edge technologies such as NIR spectroscopy for rapid soil analysis, complemented by ongoing development of digital soil mapping tools.

2.5.4 Tonga

Tonga is rebuilding its soil information systems through:

- The 2022 National Soil Survey (post-volcanic eruption) providing updated baseline data
 - Contributions to regional initiatives like the Pacific Soil Portal
 - Reactivation of soil analysis capabilities in the refurbished laboratory
- Future monitoring will be enhanced by:
- New analytical equipment (AA, UV spectrophotometers)
 - Standardized protocols aligned with regional partners
 - Capacity to process soil carbon samples

An important advancement in soil health assessment is the inclusion of stewardship as an indicator of soil functionality. Traditionally, soil health has been evaluated based on physical, chemical, and biological properties. However, stewardship—defined as the relational value of knowledge, care, and sustainable land management—has now been recognized as a key factor influencing soil health. This aligns with the approach taken in Tonga’s soil strategy, where stewardship is considered a core component of soil sustainability.

2.5.5 Pacific Community (SPC)

The soil monitoring work in Muaniweni with CSIRO and MOAW involves detailed deep core sampling and analysis of agricultural and non-agricultural land. This will establish critical baseline data for soil organic carbon and nutrient levels, using standardized methods that allow for future comparison and trend analysis. The data contributes to both national and regional soil information systems.

2.5.6 Pacific Countries

Hon. Dr. Siosua has been leading soil health assessment trainings across several Pacific Island nations, including Kiribati, Tuvalu, Vanuatu, Solomon Islands, and Tonga. These trainings align with the Pacific Soils Partnership (PSP) objectives, contributing to knowledge-sharing and capacity-building efforts.

Additionally, Dr. Rohit Lal has conducted soil health assessments in other locations (Palau, Solomon Islands, Kiribati and Nauru), further expanding the outreach and strengthening of soil health monitoring across the region.

2.6 Action Area 6: Foster Technical Cooperation Including Among Genders and Youth

2.6.1 Australia

The Australian Government's Future Drought Fund (FDF) aims to foster involvement and build capacity for all people, including women and young people. Grants programs, such as the Community Impact Program and the Small Network Grants program, have supported more than 20 projects to support women in drought-prone communities.

The FDF has also funded a National Mentoring Program to build the resilience of individuals to drought over a 12-month learning and leadership course where over 63% of participants in this program were women. Similarly, the FDF is committed to building the resilience of youths through participation in events such as the National Youth Forum, where the young people in attendance workshopped and presented funding ideas important to them. Outcomes from events such as this will help to inform funding priorities for future FDF initiatives.

The Australian Centre for International Agricultural Research (ACIAR), in collaboration with Soil Science Australia (SAA), supported 29 PICT attendees to the December 2024 soils conference in New Zealand, including the 3-day International Soil Judging competition. The week preceding the conference was a PICTs focussed Pacific Soil Analysis and Advice Workshop "Growth through Community". The workshop focussed was on strengthening the networking among soil professionals in the PICTs and enhancing their expertise through targeted training initiatives. A specialised face-to-face meeting was instrumental in fostering relationships and pinpointing the specific needs of the region. The training programs bridge the identified gaps in soil science, thereby enhancing the professional capabilities of the participants.

2.6.2 New Zealand

In December 2024 the joint Australia and New Zealand Soil Science Societies conference was held in New Zealand. This conference brought together around 390 soil and land science professionals from Aotearoa New Zealand (AoNZ), Australia, and the South Pacific. World Soils Day fell on the last day of the conference, with a plenary talk given to open the day by the national Parliamentary Commissioner for the Environment.

Prior to the conference the Moana Oceania International Soil Judging Competition was held. Across three days, the international event saw aspiring and experienced soil practitioners not only compete as an individual or team members but also develop their professional skills in the identification of soil features, soil classification, and land capability assessment.

More than 200 current and emerging researchers, students, environmental consultants, policy and extension specialists took part in the competition, from 23 universities, nine regional councils, six private consultancies, 12 research institutes/ societies, and seven government ministries.

2.6.3 Fiji

Fiji has implemented comprehensive soil programs that prioritize inclusive participation across gender, youth, and regional partnerships. The country has made significant strides in gender mainstreaming, with women participants in mobile laboratory training programs and female staff taking leadership roles in extension activities. These efforts ensure women farmers have equal access to soil health knowledge and resources. For youth engagement, Fiji has initiatives such as agricultural student internships with soil programs. This initiative aims to cultivate the next generation of soil stewards.

Regionally, Fiji serves as a hub for collaboration, hosting training sessions for Pacific soil scientists, actively participating in New Zealand Soil Science Society (NZSSS) conferences, and sharing critical soil data through SPC networks.

2.6.4 Tonga

Tonga's soil programs emphasize collaborative approaches:

- International Partnerships: Working with CSIRO, ANU, SPC, and Maanaki Whenua Landcare
 - Regional Cooperation: Participation in Pacific soil networks
 - Cross-Sector Engagement: Involving agriculture, environment, and education sectors
- Gender and youth considerations are being integrated through:
- Inclusive training opportunities
 - Community-based research trials
 - Awareness programs targeting schools

2.6.5 Pacific Community (SPC)

The SPC initiatives fostered valuable technical cooperation through partnerships with CSIRO, Fiji's Ministry of Agriculture, MWLR, ACIAR and local farming communities. The programs specifically engaged women and youth participants, ensuring inclusive approaches to soil management and knowledge sharing.

3. Conclusion

The progress outlined in this report underscores the transformative impact of collaborative soil management across the Pacific region. Through the PSP network, countries have made significant advances in research, capacity building and policy development aligned with all six GSP action areas. SPC's work in Fiji has yielded particularly valuable results, including measurable improvements in soil health awareness, agricultural productivity, and governance systems.

The integration of stewardship as an indicator enhances the governance of soil management by acknowledging the human dimension in soil functionality. It encourages local communities, extension officers, and policymakers to consider not only scientific measurements but also the cultural and ecological knowledge of soil care.

Building on these successes, the PSP network is committed to scaling up the Soil Doctors program to other Pacific Island Countries and Territories; establishing long-term soil monitoring sites across the region; testing and introducing practical decision-support tools for extension officers and farmers; and strengthening regional collaboration mechanisms. The Muaniweni research trials and soil survey have created a strong foundation for evidence-based soil management that can be replicated throughout PICTs.

However, to fully realize this potential, the PSP requires dedicated funding support to expand its reach and impact. We call on development partners, governments and stakeholders to invest in: scaling successful pilot programs to more communities; enhancing technical capacity across all PICTs; and increasing the visibility of soil health initiatives at regional and global forums. With strengthened resources and sustained collaboration, we can ensure no Pacific Island nation is left behind in our shared mission to protect this vital resource.

Together, through the PSP network and in partnership with the Global Soil Partnership, we are turning the tide against soil degradation - securing the foundation of food security and climate resilience for future generations across our Blue Pacific continent.