Australian Government
Australian Centre for International Agricultural Research

Soil management in the Pacific to achieve improved crop yields and resilience to climate change

Key details

Location
Fiji, Kiribati, Samoa, Tonga

Duration
Start Aug 2016 **End** Jun 2017

Budget AUD 120,000

Commissioned organisation
CSIRO

Project Leader
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Program Soil and Land Management

Project code SMCN/2016/014

Overview

Inadequate soil knowledge is constraining the sustainable intensification of agriculture in the Pacific Island Countries and Territories (PICTs). Management practices in traditional gardening systems are intensifying and this is depleting the soil's nutrient capital. Comprehensive nutrient budgeting is essential for improving farm productivity and agricultural resilience on volcanic islands and sand atolls. At present, extension officers are unable to reliably ascertain which nutrients (or other factors such as diseases) are limiting production let alone recommend optimal nutrient inputs. The lack of access to information on soil types and their distribution further limits the ability to extend the results from previous research studies or well-understood farming systems to other locations across the PICTs. Farmers recognize that this lack of soil knowledge is a production constraint. There is a need to increase capacity of all stakeholders participating in relevant value chains (e.g. from farm to market) to overcome this significant threat to livelihoods and natural capital.

A priority for any future work is to enhance soil knowledge and provide a reliable foundation for sustainable intensification of agricultural systems by growers, extension officers and policy makers. The starting point is a strong systems view that ensures nutrient budgeting is a routine part of agriculture throughout the region. This will help identify effective and sustainable interventions. It would involve a move away from the current focus on one or just a few potentially limiting nutrients. The systems view also needs to be framed within a broader pedological and landscape context that ensures more effective generalization of research results (this will represent a change from the current practice where results from field experiments are either assumed to apply to that site only, or at the other extreme, assumed to apply everywhere).

Another priority is to develop improved information systems for delivering practical advice on how to achieve sustainable soil management. Most existing information is inaccessible and this needs to change. Fortunately, the dramatic advances in geospatial technology have opened new possibilities for the development of a Pacific Soil Portal. Experience with

such systems in Australia and New Zealand indicates that apart from providing advice on soil management to farmers and advisors, the Portal can meet the needs of other scientific communities (e.g. those involved in simulation modelling, spatial analysis, environmental monitoring), agribusiness and government. The main beneficiaries from the future work outlined in this project will be farmers and the national economies as a whole because of increased profitability resulting from improved farming practices and the resulting multiplier effect throughout the economy.