Soil and Land Management

Integrated water, soil and nutrient management for sustainable farming systems in South Central Coastal Vietnam and Australia

Australian Government
Australian Centre for International Agricultural Research

Overview

Almost 70% of the nine million people living in South Central Coastal Vietnam (SSC VN) earn a living from agriculture. Given that rural poverty is high, improving returns from agricultural production is vital to improving livelihoods in the region.

Groundwater-dependent farming systems in SCC VN are mostly established on sands, and the main irrigated crops are peanut, mango and vegetables. Groundwater in SCC VN is vulnerable to overexploitation and pollution due to nutrient and contaminant leaching. The region experiences severe flooding in the three- to five- month wet season and soil water deficits and water shortages in the seven- to nine-month dry season.

Improving knowledge of groundwater resources will improve planning and regulation, and boost livelihoods on farms through more productive water and nutrient use. Australia has the expertise to address some of the major challenges to crop production in the region arising from low fertility and low water availability of its sandy soils.

KEY FACTS

ACIAR Project No. SMCN/2012/069
Duration: June 2014 to May 2018 (4 years)
Target areas: Vietnam
Budget: A$1,628,163

Project Leader
Richard Bell, Murdoch University

Key partners

- Flinders University
- Agricultural Science Institute for Southern Central Coastal Vietnam (ASISOV)
- Department of Agriculture and Rural Development – Binh Dinh, Ninh Thuan and Quang Nam
- Centre for Water Resources Planning and Investigation
- Hue University of Agriculture and Forestry
- Institute of Agricultural Science for Southern Vietnam
- Department of Natural Resources and Environment – Binh Dinh
- Nong Lam University

ACIAR Research Program Manager
Dr James Quilty

Objective

The project's aim was to identify and facilitate adoption of technologies and strategies for sustainable groundwater utilisation and to develop options for improving the productivity of soils in SCC VN and Western Australia (WA).

The project's three main objectives were to:

- Assess groundwater utilisation and quality in targeted areas within Binh Dinh and Ninh Thuan provinces in SCC VN.
- Evaluate methods to improve on-farm water use efficiency and to overcome soil constraints and reduce nutrient leaching in SCC VN and WA.
- Determine promising soil and water management technologies for adoption by farmers and develop scale out and communication programmes for SCC VN.

Expected scientific results

- Groundwater model and improved knowledge of the regional groundwater balance and its economic value for agriculture in SCC VN, now and into the future.
- Integrated water, soil and nutrient management training modules for Vietnamese farmers.
- Irrigation, fertiliser and soil management options to increase soil productivity in SCC VN, and fertiliser and soil management options to increase soil productivity in WA.
- Economic analysis of the whole farm benefits and costs of implementing promising new technologies.
- Demonstrations to encourage adoption of promising technologies and practices and proposals to secure central government approval and funding for expanding scale out programmes in SCC VN.
- Communication to influence policy and initiatives aimed at improving groundwater sustainability in SCC VN.
- Scientific impacts published through peer-reviewed papers.

Expected outcomes

- Adoption of water and nutrient efficient technologies leading to potential net gains of USD 9 million/year for peanut, cashew and mango farmers in SCC VN.
- Protection and recognition of the economic value of groundwater resources for agriculture in SCC VN.
- Options to improve economic efficiency of water and fertiliser use and increase crop productivity in SCC VN and WA.
- Soil and nutrient management research in WA adding value to research in Vietnam.
- Addressing of groundwater quality issues in SCC VN potentially stimulating initiatives that deliver community health benefits.
- Greater capacity among research and extension personnel and farmers.

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