

# Overview of papers from the PNG National Agricultural Research Institute

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A majority of the people in the 22 small Pacific island countries and territories live in rural areas and rely largely on agriculture for their livelihoods and food security. Subsistence or semi-subsistence agriculture remains a significant activity in these countries and helps sustain the livelihoods of around 75 per cent of the population. The population of the Pacific islands has been growing at about 2.5 per cent per annum. In contrast, the per capita agricultural production in this region has been increasing only marginally or in some cases even declining. At the same time, agricultural productivity has remained almost static or even declined and is certainly not keeping pace with the population growth rate. The Food and Agriculture Organization (FAO) has identified many of the Pacific island countries and territories as having a poor food security status as shown by low food production and productivity, increased volume of imported food, a decline in purchasing power and poor to worst indicators of health and nutrition.

Applied agricultural research is perceived by the National Agricultural Research Institute (NARI) as the key intervention to provide improved technologies and alternative options for increasing agricultural productivity and production,

ensuring food security and improving overall welfare of the people in the region. Based on available research resources such as genetic diversity of indigenous crops and common research and development issues, the Institute has identified a number of areas for collaboration and partnership with the countries in the region. These include the management, utilisation and sharing of plant genetic resources; fruits and nuts development; feed and feeding systems for livestock; development of a Pacific regional crop improvement program (PARCIP) and improvement of agriculture on atolls. On the basis of such ongoing research activities, NARI researchers and its collaborating scientists presented four papers at the Economics Research Workshop on Pacific Agriculture.

In their paper, Rosa Kambuou, Clifton Gwabu and Mary Taylor emphasise the importance of plant genetic diversity in the region and show how this diversity can contribute to the regional development. The Pacific region is highlighted as the centre of secondary diversity of major staple root and tuber crops and cooking bananas and is also known as a home to many exotic fruits, nuts and vegetables. This diversity has been contributing in a variety of ways to livelihoods of people

in the region. However, the crop genetic diversity remains a grossly underutilised resource, in spite of its promises in terms of variety, product differentiation and premium prices, insurance, employment opportunities, export diversification, foreign exchange earnings, and a strong connection with history, culture and identity. They point out that the crop diversity, if utilised appropriately, has tremendous potential to spur and sustain economic and social advancement in the region.

The Pacific region is also richly endowed with a diverse species of indigenous nuts such as *Canarium indicum*, *Terminalia kaernbachii* and *Barringtonia procera*, spices and a range of minor crops such as nutmeg, pepper, cardamom, vanilla, chilli, kava, balsa wood and eagle wood, with all having a big potential for development and export. In this context, the paper by John Moxon and Tio Nevenimo examines three case studies on vanilla, balsa wood, and cardamom development in Papua New Guinea and compares them with the major export tree crop commodities such as cocoa, coconut, and oil palm to identify reasons for their success or failure. Critical limiting factors and comparative advantages in minor cash crop development are identified. Two new minor cash crops, galip nut (*Canarium indicum*) and nutmeg/mace, which have been selected recently for research and development in East New Britain, are also discussed.

The paper further emphasises that there is potential and need for collaboration between Pacific island countries to produce and promote new agricultural products, for example, to establish a Pacific regional production chain for the supply of galip nuts to export markets. Regional quality standards are also needed for some crops. For example, kava has this need to avoid health issues again threatening the export industry as a pharmaceutical product.

Pau and Aila are also good quality nuts found throughout Melanesia and these have potential for development. Many of these nuts are very nutritious and some are traditionally stored for long periods (galip nuts for up to one year) thus contributing to food security, particularly in adverse weather conditions such as El Niño years. Regional research efforts are required also to identify additional indigenous crop candidates and to produce strategies for their development.

Davinder Singh, Raghunath Ghodake and Alan Quartermain propose a Pacific Regional Crop Improvement Programme (PARCIP) to improve the yield and quality of selected staple food crops in the Pacific region and thus address food security issues and increase opportunities for income generation at both farm and national levels. The paper highlights that even the major staple food crops have received little research and development attention to improve productivity and any available information is not disseminated adequately. This conceptual idea initiated by NARI is a unique regional concept to address the challenges and opportunities in the region.

The aim of PARCIP is for countries of the region and regional organisations to cooperate to improve and utilise available food crop genetic resources using the principles of conventional crop breeding and modern biotechnologies for the benefit of all regional stakeholders. The concept and principles of PARCIP are discussed together with the rationale for collaboration and networking to enable effective research on food crop improvement under the circumstances of prohibitively high costs of research for any one country, limited capacity and the complexity of the development challenges associated with improving food crop production. The PARCIP requires formal arrangements with donor and

technical support agencies, collaboration through memoranda of understanding or agreement between agencies or elements of the individual R&D systems, and the use of collective resources and capacities to address crop improvement issues.

Louis Kurika, John Moxon and Meli Lolo discuss some of the main issues affecting food security in the small Pacific islands and atoll countries, and present the research and development strategy used by NARI in Papua New Guinea to address food security in PNG islands and atolls. This is yet another serious dimension of development in the Pacific region, wherein food security in small islands and atoll countries is increasingly under threat from a wide array of socio-cultural, environmental, and economic factors affecting food production and supply systems. The paper recognises that there is no definite and sure way to strengthen food security in Pacific countries, especially atolls, given the variability in socio-cultural, environmental and economic factors between and within these countries. However, given the limited prospects for export-oriented agriculture and industrial development on atolls, the solution seems to be to undertake research and development strategies that focus on improving subsistence agriculture and, where possible, cash income opportunities.

These four papers are based on ongoing NARI research activities and contribute relevant research and a development agenda for the Pacific region. This agenda needs to receive support and collaboration from national, regional and international agencies and all the countries in the region. These interventions can be effective in realising growth and stability in the Pacific region as projected in the Australian Government's *White Paper on Australia's Overseas Aid Program: promoting growth and stability*.