



# Overview of the Economics Research Workshop on Pacific Agriculture

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The Crawford School of Economics and Government of The Australian National University and the National Agricultural Research Institute of Papua New Guinea, with funding support from AusAID, held an Economic Research Workshop on Pacific Agriculture on 16–17 July in Lae, Papua New Guinea. The underlying motivation for the Workshop was the belief that agriculture should be able to play a much greater role in raising the living standards of the peoples of the Pacific island countries, especially the vast majority who earn their livelihoods from agricultural production (Duncan 2007).

Participants were invited to present research on the following important topics: estimates of agricultural productivity growth and how best to increase agricultural productivity; the impact of government policies, especially in the areas of pricing and marketing on agricultural development; the roles of infrastructure and research and development (R&D) policy in agricultural development; cash crop versus food crop production; estate farming versus

smallholder agriculture; possibilities for product differentiation to develop niche markets; the development of supply chains; development of the capacity of the agricultural sector to service the growing domestic tourist market; and development of export markets, including meeting health and safety standards.

A selection of the papers from the workshop is published in this special issue of the *Pacific Economic Bulletin*. It is planned to publish other workshop papers in later issues. This overview discusses the papers published below.

Euan Fleming and Mahendra Reddy both report on estimates of productivity performance in Pacific agriculture. Fleming estimates crop productivity over the 1970–2002 period in five Pacific island countries, namely, Fiji, Papua New Guinea, Solomon Islands, Tonga, and Vanuatu, by measuring total factor productivity (TFP), labour productivity, and land productivity through construction of Malmquist indices. Reddy estimates agricultural technical



efficiency in four Pacific island countries (Fiji, Papua New Guinea, Samoa, and Tonga) through estimation of stochastic production functions for each country over the period 1961–2004.

Fleming finds that there has been little in the way of agricultural productivity growth in the Pacific island countries studied. TFP declined in Fiji, Tonga, and Vanuatu, while there was no significant trend in TFP in Papua New Guinea and Solomon Islands—although TFP in Papua New Guinea increased slowly after the substantial decline experienced in the period up to 1974. Reddy finds that technical efficiency has not changed in the four countries over the four-decade period.

Both writers agree that the answers to higher productivity lie primarily in pushing out the production frontier by research to increase yields through the introduction of higher-yielding varieties and improved farming systems. It is also suggested that increased productivity can be achieved through relaxation of the constraints on the supply response such as more secure access to land, economies of scale, and improved education, infrastructure, and access to credit.

From the data presented by these researchers, the adverse impacts of natural disasters on productivity are clear. Fleming points out that natural disasters such as cyclones have less damaging and long-lasting impacts on agricultural production than biological disasters. However, research to make agricultural systems in the Pacific more robust to natural disasters appears highly desirable. Fleming also makes the important point that the Pacific has a high dependence on tree crops and root crops and that there has been much less research and less progress by researchers in developing higher-yielding and better-adapted varieties of these crops than is the case for annual crops and grains.

A concern with these kinds of studies that use FAO agricultural output data is the apparently poor estimation of subsistence production in the FAO figures. Because of the high dependence of Pacific islanders on subsistence production, the errors associated with national agricultural output statistics are very likely to be much higher than in most other countries.

In his paper, Bob Warner provides an excellent setting for the discussion of the kinds of research to be undertaken in the Pacific by describing the constraints to increasing productivity, expanding production, and improving welfare of communities in the village sector in Solomon Islands. The constraints identified were under the headings of culture, institutions, and policy. These constraints severely inhibit the effort and resources that people will commit to the adoption of new varieties or farming practices that could increase incomes but also increase the risks faced by the farmers. Warner notes that the highly diversified farming systems practised in the Pacific have served the people well because of the high levels of production risks.

However, Warner highlights the increasing dilemma faced by the largely subsistence sector of the Pacific island countries—particularly in the Melanesian countries of the Pacific, with their larger populations and faster population growth. As populations are growing rapidly, there is even more rapid growth of the younger cohorts, and pressure on the low-productivity subsistence sector is likely to lead to declining ability to meet subsistence demands.

Andrew McGregor's article highlights a very important issue in the development of Pacific agriculture: overcoming the sanitary, phytosanitary (SPS), and quality barriers facing agricultural exports into developed country markets. McGregor points to the unrealised market opportunities for Pacific



agricultural products in the substantial Pacific islander populations residing in countries such as New Zealand, Australia, and the United States. He notes that there are also unrealised market opportunities for unique Pacific island products elsewhere, such as in the European Union and Japan.

Overcoming the SPS barriers requires scientific data to demonstrate that the importation of Pacific island agricultural products does not pose a threat to the importing countries' agricultural sector; or what kind of quarantine treatment will be most effective in rendering the imported products harmless without reducing their quality. Besides the scientific input needed, the Pacific island countries have to gain the attention of the potential importing countries in order to carry on effective negotiations over market entry. Because of the Pacific islands' relatively small size, gaining the importing countries' attention is difficult.

McGregor makes a very important recommendation for a region-wide effort to overcome these barriers. This effort would comprise market evaluations to identify the best opportunities for agricultural exports, scientific input to develop the necessary steps for overcoming the quarantine barriers, and assistance in the negotiations with potential importing countries for the entry of Pacific island country products.

If it is to play a significant role in improving welfare in the village sector in the Pacific, agricultural development faces a very difficult but important question: how to have rapid, sustainable income growth from agricultural production within the context of communal ownership of land by societies with collectivist cultures? It is an important question because the majority of Pacific island country populations is living in such societies and is likely to do so for a long time. Marita Manley reports on one approach to raising living standards in this

situation: a community-based approach to improved agricultural production and exploitation of natural forests, while sustainably managing the forests.

Manley's realistic assessment of the Drawa project in Fiji notes the importance of security of land tenure, recognition of the needs of the community such as the demand for agricultural land for subsistence and cash, ownership of the community's plans based on full awareness of all aspects of the projects, equitable distribution of revenues from the community's enterprises, quarantining of enterprises from cultural and social obligations to ensure their sustainability, and avoidance of dependency on donor assistance provided to the project.

Analysis of the value chain (or supply or marketing chain) has proven useful in identifying bottlenecks in the movement of agricultural products 'from the farm gate to the dinner plate'. Heiko Bammann describes some of the Food and Agriculture Organization's work in this area, especially in the Pacific, and its usefulness in the development of strategies for improving farmers' incomes and employment. As the papers at the workshop made clear, overcoming many of these constraints will require substantial research, for example, on improved varieties leading to better quality, disease resistance, ability to cope with natural disasters, and so on, on improved farming systems, including more diversified systems, on overcoming quarantine barriers, as well as research leading to improved agricultural policy.

Louis Kurika, John Moxon and Meli Lolo focus on an important agricultural research issue in the Pacific island countries: what kinds of agricultural research to undertake in the small islands and coral atolls? The harsh agricultural environment encountered in small Pacific islands and atoll countries—for instance, low soil fertility,



little organic matter, poor water holding capacity, unpredictable rainfall, and natural disasters such as cyclones—plus their small populations but high population densities, as well as their high trade costs, make it unlikely that they will be able to develop export-oriented industries. However, they have to maintain and even improve their food security within a situation where they have to have a high level of food self-sufficiency.

Kurika, Moxon and Lolo outline the research program being undertaken by the PNG National Agricultural Research Institute's Wet Lowland Islands Program at Keravat, East New Britain Province, which is focused on improving subsistence agriculture and income-generation opportunities for small PNG islands and atolls. Among other activities, this program is undertaking screening trials to identify suitable crop species and varieties for the atoll environment and establishing an atoll crop germplasm collection at Keravat. It has been decided that atoll research in Papua New Guinea should focus on indigenous crops, soil-enhancing farming systems and post-harvest techniques. For cash crops, better yielding coconut varieties are being selected, along with high-value, low-volume, alternative cash crops.

A number of papers present current research being undertaken at the National Agricultural Research Institute. Dr Raghunath Ghodake introduces these papers in the Focus section of this issue.

It is clear from the presentations at the workshop that research can make a very significant contribution to increases in agricultural output and exports as well as to food security in Pacific countries; but that there needs to be a considerable increase in agricultural research funding for this to happen. However, it is also clear that the challenges to research are considerable. Some of the challenges identified are the

difficult physical environments of the Pacific countries, especially on the small islands and atolls, the limited progress that has been made in improving yields in tree crops and root crops, the difficulties in overcoming the quarantine barriers facing agricultural exports, the obstacles to the adoption of the results of agricultural research, and the difficulties facing development of commercial farming in the primarily communal, collectivist cultures of Pacific societies.

As far as expanding the research effort in the Pacific is concerned, it appears that more should be done to develop collaborative arrangements between the Pacific island countries. It appears that NARI can play a key regional role. With its research stations located in different ecological environments in Papua New Guinea, much of its research can be relevant to other Pacific countries—as illustrated by its research on small islands and coral atolls and its work on indigenous nuts and spices. The agricultural-related research of the University of the South Pacific campuses in Suva and Apia is a natural partner for NARI. The Australian Centre for International Agricultural Research (ACIAR) could also consider playing an integrating role in developing a much more substantial agricultural research effort in the Pacific.

## References

- Duncan, R., 2007. 'Enhancing the labour absorption capacity of Pacific agriculture', *Pacific Economic Bulletin*, 22(1):164–74.