# Policy Brief

# Agricultural Research and Farmer Organisations in the Pacific

## Summary

Farmer Organisations (FOs), once a rarity in the Pacific, are emerging as key players in the agriculture sector, making valuable contributions to the livelihoods of smallholder farmers through such areas as agricultural extension, input supply, access to markets and agricultural research.

The need for practical research and the dissemination of the information generated has never been greater with the increasing pressure of climate change, population growth and the non-communicable disease (NCD) epidemic. Farmers across the region are in great need of targeted solutions to the production constraints they are facing.

FOs involved in agricultural research utilise a decentralised research model which has proven to be more efficient and effective at meeting their specific needs than the traditional centralised research station model found across the Pacific. The decentralised research approach involves farmers themselves being directly involved in undertaking the research. In so doing this model is better able to account for the diverse ecological conditions that prevail in most island countries, where soils and climatic conditions can vary greatly over short distances. Experience has shown that crops which perform well at a research station when certain practices are followed, can fail miserably when adopted by farmers in another area. Centralised research stations have had further setbacks in recent decades due to declining and fluctuating funding. This has occurred at a time when the information needs of farmers have never been greater in the face of the increasing challenges of climate change and commercialisation.

A decentralised research model, which utilises FOs, is proving to be an effective way to respond in a practical way to the specific challenges of Pacific island farmers. This approach allows for the efficient collection of diverse and widespread data, which in turn leads to higher farmer uptake. Effective partnerships between FOs and Ministries of Agriculture can yield substantial benefits to the sector and broader economies of Pacific island countries.

### KEY MESSAGE

A partnership between agriculture ministries, relevant public sector organisations and farmer organisations will increase the depth and quality of agricultural research as well as see more comprehensive and widespread adoption of the results. The need for such an approach has assumed greater urgency with pressures of climate change, declining soil fertility, population growth and rapid urbanisation and the NCD epidemic that is currently being experienced in the region

## Challenges facing Pacific Island Farmers that need research solutions

The agriculture sector in the Pacific has a number of major challenges that affect the productivity and profitability of farming. These challenges, which are often inter-related, include:

- Adapting to climate extremes and climate change
- Declining soil fertility
- The narrow genetic base of most traditional staple crops
- The increasing incidence of pests and diseases
- Quarantine and other market access requirements of importing countries
- The increasing dependency on imported food

Meeting many of these challenges will require the contribution of applied research solutions.

## Research to provide farmers with appropriate crop varieties to address climate change and climate extremes

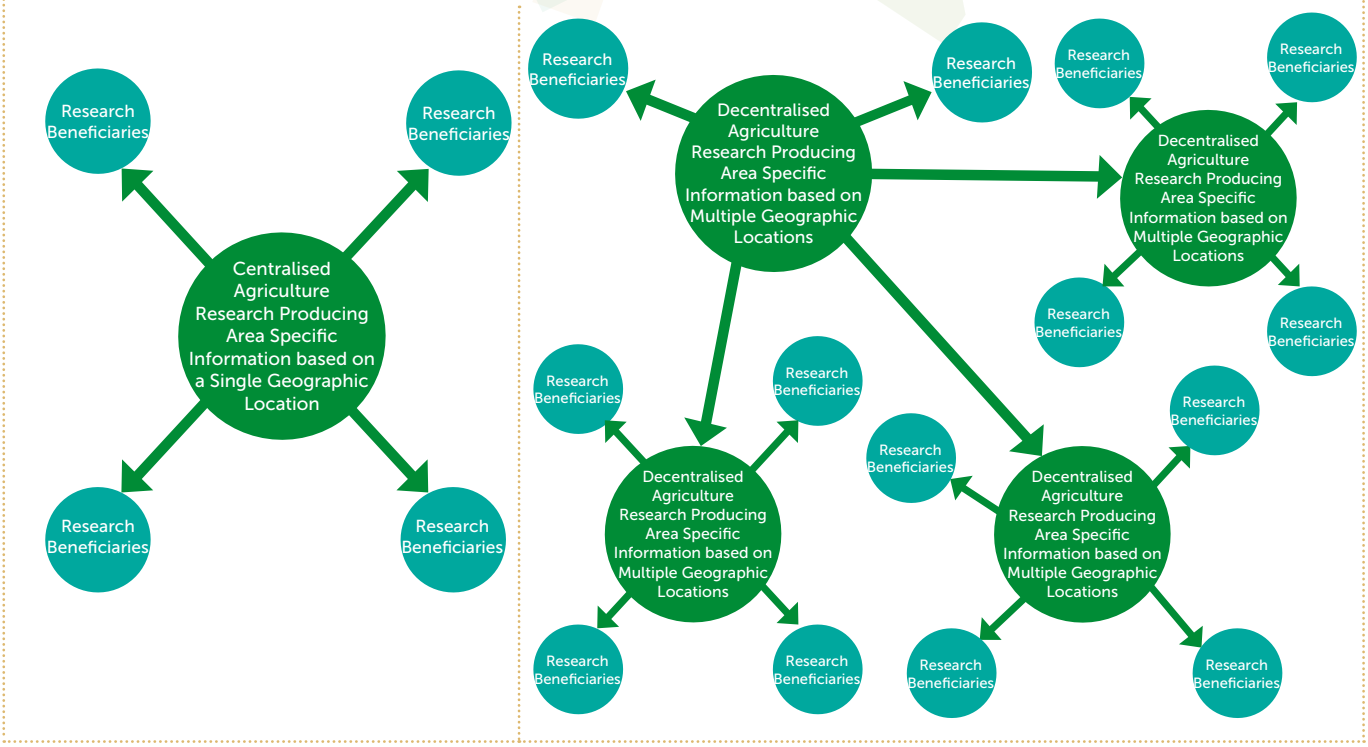
Most of the root crops grown across the Pacific originated in Melanesia which has resulted in narrow genetic diversity. This has increased the susceptibility of these staple food to diseases that could become more widespread and vigorous with climate change. The impact of this vulnerability became starkly evident with the taro leaf blight (TLB) outbreak in Samoa in 1993. Food security and livelihoods were threatened and Samoa's main export industry came to a halt.

The projected increase in climate change and extreme weather events is likely to adversely affect food production and food systems in the region. Therefore, research to broaden the diversity of crops and the cultivation of these varieties will enrich farmers' varietal portfolios and in doing so provide protection against future epidemics and biological disasters.

Increasing diversity of varieties grown is a 'no regrets' strategy for reducing risk.

Decentralised research is also imperative because of the uncertainty of predicting how particular crops and cropping systems will respond to different climate variables and there is also the difficulty of projecting future climate for specific locations on individual islands.

# Centralised Research Model vs. Decentralised Research Model




| Centralised research model | | Decentralised research model | |
|---|---|---|---|
| Traditional model in the Pacific where agricultural research all takes place on one or two main government-run research stations. | | Decentralised research utilises a farmer participatory model where trials are replicated on sites across a wide range of agro-ecological conditions. | |
| **Advantages** | **Disadvantages** | **Advantages** | **Disadvantages** |
| In the past had the resources including funding and planting material<br><br>Appropriate for breeding for resistance to a serious disease (Centralised research is required before local evaluation can be undertaken)<br><br>Appropriate for facilitating the importation of improved germplasm for subsequent evaluation by farmers<br><br>Made up of academically qualified personnel who have access to the latest research technology. | Budget and resources no longer assured due to increasing pressure on government resources and changes in policy and focus<br><br>Does not take into account the different climate and environmental conditions especially in large archipelago countries where climate and environmental conditions vary over relatively short distances[1]<br><br>Focus changes as per changes in government policies<br><br>Has the potential to be disconnected from the needs of farmers. | Increased likelihood of meeting the direct needs of farmers<br><br>Increased probability of farmer uptake as they are involved in the research themselves<br><br>Research outcomes cover a wider geographic area and therefore are directly relevant to more farmers.<br><br>Farmer participatory research can be more economical as it utilises existing infrastructure and farmer inputs<br><br>It benefits from farmers' practical experience and local context.<br><br>Farmers are doing the research themselves - taking their ideas, combining them with good science, and tailoring the technologies and methods to meet their needs. | Can be highly demanding in terms of management and supervision<br><br>Can lack scientific rigour if not properly planned and managed<br><br>Often disconnected from international research knowledge<br><br>Lack of funding, particularly for capital and technical equipment. |

[1]Climate Book (page 284) In Vanuatu for example climate ranges from hot tropical in the north to almost subtropical conditions in the south. Average seasonal temperatures range between 21 and 27. Therefore, a crop that grows well in one place does not grow well in another.

# Case studies: Farmer Organisation involvement in successful agricultural research

## Farm Support Association (Vanuatu)

The Vanuatu Farm Support Association (FSA) and Vanuatu Agricultural Research Centre (VARTC) collaborated on a pilot project to broaden genetic diversity of taro, yams, sweet potato, and cassava in farmers' fields and evaluate on-farm conservation in Vanuatu's traditional cropping systems.

FSA grew out of an earlier group, the Plantation Support Association (PSA) which was set up in 1983 to assist ni-Vanuatu landowners run plantations returned to them after independence was declared. By 1992, circumstances changed and PSA became FSA with an emphasis on providing the needs of small-scale farmers.

Two years after the new varieties were distributed to 10 villages, monitoring of farmers' fields showed an 86 per cent net gain in diversity for yam villages and 61 per cent gain for taro villages.

By enriching farmers' varietal portfolios, protection was also provided against future epidemics and biological disasters which is expected to increase with climate change.

Screening the germplasm material for distribution and establishing new varieties required significant upfront costs. However, once the 'new' germplasm was embedded in the local farming systems and maintained by the farmers themselves, **it came at no additional cost to government or donors.**

## Teitei Taveuni (Fiji)

Teitei Taveuni (TTT) was formed in 2009 to respond to challenges that threatened the livelihood of Taveuni farmers. These include deforestation, unsustainable land use, decline in soil fertility, high use of chemical sprays and conventional fertilizers, and water catchment problems.

TTT was a key partner on the Soil Health Project, in conjunction with the Australian Centre for International Agricultural Research (ACIAR) and the Pacific Community (SPC). TTT worked with the Fiji Ministry of Agriculture and other partners to establish and monitor field trials on member farms around the island. When research results indicated that a particular treatment increased yields or improved quality, the farmers were quick to adopt the technology because they understood and had ownership over the research.

Research findings revealed that new inputs were required to restore balance to the highly degraded Taveuni soils. These inputs included: mucuna bean as a cover crop, ag lime, fish meal or bone meal and rock phosphate. Because these inputs were not readily available, TTT established a farmer resource centre where they began selling these inputs to members who were interested.

## Nature's Way Cooperative (Fiji)

NWC was formed in 1996 to undertake mandatory quarantine treatment on behalf of the fresh fruit and vegetable industry. NWC currently has 290 farmer and exporter members

Following a number of low output years, NWC realised that there was a need to assist their farmer/exporter members in addressing a number of the bottlenecks affecting the supply of produce for export. NWC concluded that if they did not help address these issues the quarantine treatment business would be at serious risk.

In 2009 the NWC Research and Extension Service became involved in implementation of the Australian Centre for International Agricultural Research (ACIAR) – funded Fiji Papaya Project and later the ACIAR funded Pacific Breadfruit Project. Through a partnership approach NWC has fostered research relationships with the Ministry of Agriculture, the Biosecurity Authority of Fiji and the Pacific Community.

NWC works directly with its member farmers and exporters for all applied research work and has achieved a number of major successes using this model including:

**i) Papaya:**

- Establishment of a certified seed producer's scheme for Fiji Red Papaya based on research findings . Now run as a commercial scheme by NWC with oversight from the Ministry of Agriculture.
- Investment in a commercial hot water dipping treatment available to Fiji papaya exporters through NWC. This treatment was developed through four years of postharvest research led by NWC. The treatment is expected to overcome the major source of postharvest loss currently being suffered by the industry. It has the potential to save the industry approximately $2 million annually.
- Encouraged commercial investment at the farm and exporter level in organic papaya production based on research findings and economic analysis.
- Development of technologies supporting sea freight of papaya from Fiji to New Zealand. Research findings indicate a 50% saving in freight costs with no reduction in fruit quality.

**ii) Breadfruit:**

- A package of best practices for mass propagation of breadfruit using various methods including: root suckers, marcotting and tissue culture.
- Long term trials established evaluating performance of trees derived from different propagation types.
- Investment at the farm level in commercial orchards - as of July 2015, there were 42 participating farmers in the Fiji western division that had planted 2,240 breadfruit trees on eighteen (18) hectares of land.
- Farmer-owned demonstration orchards are now coming into production some 18 months ahead of expectations, greatly improving the expected viability of breadfruit as a commercial crop.
- Developing intercropping systems with breadfruit – several trial sites have received a positive cash flow from their orchard sites from year 2 using intercropping of kumala, eggplant, cassava and pineapple.

## EXAMPLE OF THE INEFFECTIVENESS OF THE CENTRALISED RESEARCH MODEL:

A soon-to-be published book on climate change and agriculture (Taylor et al., 2015) highlights an example from Vanuatu where selected cultivars of different crops developed at the Tagabe Research on Efate performed poorly when taken north to Santo. Similarly, the performance of high yielding cocoa developed at the VARTC research station on Santo was disappointing when planted in the main cocoa growing area on the island of Malekula less than 100km South. Malekula farmers are now selecting their own cocoa seed despite the substantial resources devoted to cocoa selection over the years. As a result, the industry is now experiencing significant inbreeding -related yield depression.

# WAY FORWARD for Farmer Organisation involvement in Agricultural Research

## Action for Government and Development Partners

- **Review research structure model** - Introduce a decentralised research model that can work in collaboration with centralised research stations.
- **Provide public funding for decentralised research**
- **Pursue** partnerships with FOs as part of the decentralised research approach. Farmer-led research carried out by FOs have made good progress in this regard.
- **Governments and development partners should take advantage of positive contributions FOs can play in applied agricultural research.** By developing partnerships with FOs, the government will be able to get better value for public funds used because more farmers benefit.
- **Research undertaken should focus on the needs of farmers.** Involve farmers and FOs in the setting of research priorities to ensure farmer needs are met
- **Address knowledge gaps related to the impact of climate change on agriculture:** Applied research must be carried out, in collaboration with FOs, to address knowledge gaps and improve our understanding of the uncertainties, constraints and opportunities relating to climate change. This will allow more confident decision-making and a better allocation of resources.

## Action for farmer organisations

- Understand the decentralised model and the role farmers and farmer organisations can play in applied agriculture research
- Make farmer focussed research priorities known to governments and private sector
- Seek out partnerships with public research organisations and the private sector to undertake the necessary research
- Promote the production of traditional crops and traditional farming systems. These crops and cropping systems have proven resilient to climate extremes and climate change over the years. Increasing the productivity of traditional crops is also critical for future food security of PICs in view of the forecasted increase in the real price of imported grain as a result of climate change.

## PIFON WHO WE ARE

PIFON is a network of farmer organisations in the region that has been operating informally since 2008 and was formally registered in 2013 by eighteen (18) foundation national FOs, from six (6) Island countries. PIFON is intended to serve as an umbrella organisation for national FOs to: coordinate capacity building, share success stories and the lessons learnt, support regional exchanges of expertise between FOs and their associated private sector and donor agency partners.

PIFON defines a farmer organisation as a group of farmers or a group working for the benefit of farmers. In the Pacific these can take many forms such as an Association, Cooperative, Farmer group, Farmer cluster, Youth group, NGO, Commodity group, Council, Federation, Club etc.

For more information visit: www.pacificfarmers.com


**Important references**

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In partnership with:

MTCP2 Medium Term Cooperation Programme with Farmers' Organisations in Asia and the Pacific, Phase II

IFAD Investing in rural people

Schweizerische Eidgenossenschaft
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PAPP Pacific Agriculture Policy Program

Pacific Community
Communauté du Pacifique

EUROPEAN UNION