

Behavioural change for better nutrition in Papua New Guinea

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Abstract



There is a decline in the consumption of traditional vegetables in PNG, which adversely affects family nutrition and is increasing the rates of malnutrition and obesity. Traditional vegetables are climatically adapted to PNG, require lower inputs, and are superior in food value when compared to globally popular vegetables. They have more essential nutrients, and historically provided a large proportion of the daily protein, vitamin and mineral intake in the village diet. Turning around the decline in consumption and supply of traditional vegetables will improve food and nutritional security. This is particularly true for remote and isolated communities and poor urban populations. Our research found that people lacked awareness of the nutritional value of traditional vegetables. People consider these vegetables to be 'backward' and 'poverty' food. Conversely, traditional vegetables connect strongly to culture and 'home'.

We trained smallholder farmers to manage pests and diseases and save the seeds of traditional vegetables to reduce their input costs. We worked with families and communities to increase their awareness of the nutritional value of traditional vegetables. We trained families in gardening and cooking so they could grow and cook a variety of nutritious food from their own gardens. We created fresh recipes for local vegetables. Next, we plan to work with maternal-child clinics linked to hospitals where mothers learn to make nutritious cheap food from their own gardens. We will run school-based programs involving teacher education, school gardens and incentive-based lunchboxes. Some growers have applied their seed-saving skills to setting up small-scale seed businesses.

This is Albertha. She's a very typical PNG woman. She is a mother of two, she is a housewife, and she's also a subsistence farmer, and until she joined our project she and her family would have a very modern diet including things like 2-minute noodles, white rice, and bread. Traditional vegetables on the other hand are very high in things like vitamin A, vitamin C, iron, folate, and other



This paper has been prepared from a transcript and the illustrative slides of the presentation.

micronutrients. They also have the advantage of being drought-tolerant, and climatically adapted to PNG.

There is an alarming crisis in PNG at the moment, where we are seeing more than 50% of children under five suffering some form of undernutrition. Further, around 76% of all childhood deaths are directly attributable to malnutrition.

We asked the question: What role can traditional vegetables play in improving nutrition? To answer that, we worked in northern Australia and PNG, especially in some parts of Bougainville, in peri-urban areas of Port Moresby, rural areas in Central Province, and we also did some work in Lae. This paper focuses on the PNG component, and describes three key aspects of our work: (i) the problem with perceptions around traditional vegetables, (ii) strategies for behaviour change, and (iii) some solutions, looking forward, where there's more work to be done.

The problem: perceptions around traditional vegetables

The problem is that a lot of people now in PNG are eating less of the traditional vegetables, and less vegetables overall. There is a high rate of undernutrition in PNG, and this leads to stunting and intellectual deficits. Many micronutrient-rich vegetables are increasingly being replaced by store-bought foods, in both urban and rural areas. These bought foods are energy-dense but nutritionally poor. For example, in a typical shortcut meal in families today the children are fed basic rice and tinned fish, with no vegetables. The amounts of food children eat, and the kinds of food that they eat, are significant causes of childhood malnutrition.

Our project

To try to counter this problem, we looked first at the market, to find out what were consumer preferences among the rural and the urban consumers of traditional vegetables (Figure 1). What were their most preferred vegetables, and the reasons for those preferences? And how much were they willing to pay for the vegetables? To understand consumption and intake of traditional vegetables in the urban and rural areas, we asked consumers to keep food diaries.



Figure 1. Traditional vegetables for sale at the market, PNG.



Figure 2.

With the farmers, we wanted to understand what training they needed in marketing, in basic crop management practices, in pest and disease issues, and in seed saving and germplasm conservation. Figures 2 and 3 show farmer surveys that we conducted; in Figure 3, farmers are identifying common pests of vegetables.

We found out that consumer preferences in relation to traditional vegetables depended on the area they came from.

Generally there is an irregular intake of traditional vegetables and a lack of nutritional knowledge. Figure 4 shows a range of traditional leafy vegetables like aibika, amaranth, and rungia, and they are very rich in iron, folate, and micronutrients. We saw that there was a general decline, in the modern generation, in knowledge of and preparation of traditional vegetables.

Traditional vegetables are relatively expensive compared to introduced vegetables because they are seasonal, but the farmers who grow and sell them



Figure 3.



Figure 4.

can make a lot of money from traditional vegetables. We also found that the women who were selling those nutritious vegetables were then using the money they had earned to buy store food and introduced vegetables, thinking they were doing the right thing for their family.

In summary, we found the growers lacked knowledge in best practice crop management practices. They also lacked knowledge of improved seed-saving technologies, and of pest and disease management techniques, and of conservation of the diversity of vegetables that they grew in their gardens.

Some solutions tried

We tried several solutions in this project, to help and contribute to behavioural change in the consumption of traditional vegetables in the country.

Our main focus was on creating awareness of, and interest in, these traditional vegetables. We did this by working with schools, communities, media, families and farmers, as well as other stakeholders that worked with communities. For example, for school children we created games and activities that would be appealing to them (Figure 5). We also created catchy little nutrient and growth packages for them. One success story I want to share is that an egg-producing



Cartoon illustrations, activity books and snakes and ladders

Figure 5. Games and activities to make vegetables interesting to children.

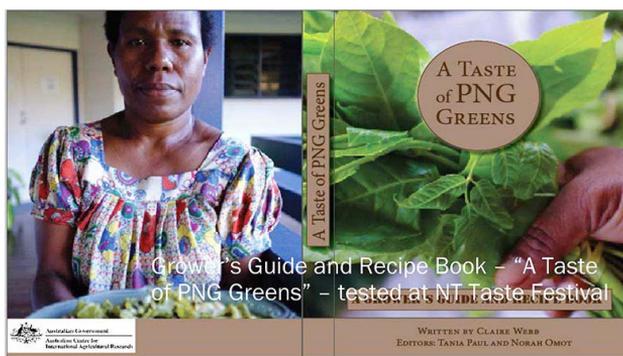


Figure 6. Grower's guide and recipe book: *A Taste of PNG Greens*.



Figure 7. An example recipe.

company in the country also included these packages in their cartons, and the egg cartons were sold nationwide in the stores that sold their eggs.

Then we went further and created a *Grower's Guide and Recipe Book* (Figure 6), as a resource that would be useful for extension officers, agricultural teachers, families, and leading farmers – and anyone who would be interested. The recipes that we created adopted the traditional method of cooking but included a twist and fresh approach (for example, Figure 7). We also did cooking



Figure 8.



Figure 9. An ACIAR-supported kitchen garden.

demonstrations, and found there was keen interest from the participants, who included a lot of men as well as young women and mothers (Figure 8).

We provided information as recipes, factsheets and posters to a wide range of audiences by attending and participating in shows, exhibitions, and meetings. We also gave radio talks about traditional vegetables and about our project. We also had traditional vegetables featured in local newspapers as well as on local TV programs and on social media such as Facebook.

We established community kitchen gardens in peri-urban areas (e.g. Figure 9), to be a model for farmers in the surrounding communities, and we conducted farmer-training sessions based on their needs: for example, training in integrated pest management by staff of the World Vegetable Center. In those sessions we also took the opportunity to bring in important stakeholders such as the Health Department, especially staff of the malnutrition section in one of the biggest hospitals in the country. We wanted families to see the value in the vegetables that they are growing, and to understand that rates of malnutrition are very high in their communities.

You remember Albertha, from the start of this story? In Figure 10 she is attending one of the first seed-saving training sessions, one of many training



Figure 10. A session training smallholders in seed-saving techniques.

sessions that she has attended. She has now started a small seed-saving business, and is training other women farmers as well.

Our hopes for the future

Education is the key, so we want to keep on promoting school programs, as well as working with maternal clinics linked to the hospitals. We will teach mothers to grow kitchen gardens and to have the three main food groups in those gardens so they can make nutritious meals with them. We will also be working with other stakeholders, especially Church groups, that can take our messages out to the remote areas.

For seed saving, we want to look at expanding the concept of community seed banks, and improve knowledge of seed-saving technology in the wider grower community. We will also work with the Government to strengthen the seed-saving systems for traditional vegetables, and we hope to go further into conservation and germplasm conservation of the huge diversity of traditional vegetables in PNG.

We also want to continue working with existing role-model farmers like Albertha, to carry on training the farmers.

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Philmah has six years' experience working in research and development activities, mainly with vegetables, promoting sustainable production and community gene-banks with farming communities in Papua New Guinea (PNG). She is an agronomist with the Papua New Guinea National Agricultural Research Institute, and is a passionate advocate for agriculture in PNG, especially working with young people and women from rural areas. Ms Waken graduated with a Bachelors degree in Agricultural Science from the Papua New Guinea University of Technology and is currently enrolled in a Masters in Agricultural Science degree program with the University of Queensland.

Tania is currently the Horticulture Team Leader and Research Fellow at Charles Darwin University in the Northern Territory, and leads the ACIAR project 'Promoting traditional vegetable production and consumption for improved livelihoods in Papua New Guinea and northern Australia'. She has lived and worked in Timor-Leste, Papua New Guinea and Indonesia, including remote areas of West Papua in community-driven development, capacity building, natural resource management and agriculture. Tania has a background in agriculture and natural resource management, and has a strong interest in education, training and capacity development including TVET (Technical & further education Vocational Education & Training) research and pathways.