

# Pacific Issues of Biodiversity, Health and Nutrition

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## Abstract

Neglect of traditional food systems has led to serious nutrition and health problems throughout the Pacific Islands. At the same time, there is concern about the loss of traditional knowledge, customs and culture related to local foods, and of biodiversity. However, there is still a great diversity of nutrient-rich local food crops in the Pacific, along with considerable knowledge about these foods, their methods of production, harvesting, storage, and preparation. An integrated approach is needed in order to make a meaningful impact on increased production, marketing/processing and use of local food crops and foods for better health and nutrition, requiring greater collaboration between the health sector and agencies in other sectors. Priorities for action include: documentation and assessment of traditional food systems, including analysis of local foods and crop varieties for their nutrient content; innovative means of increasing awareness of the values of local foods among the general public and policy makers; conservation of rare varieties of crops and food trees and protection of the environment; and an increased focus on small-scale processing and marketing of local foods. Overriding all of this is the urgent need to mainstream consideration of these important issues into relevant national and regional policies. The rubric "Biodiversity for Health and Nutrition" incorporates all of these issues and provides a framework within which all partner agencies can be involved.

## Introduction

Serious health problems have emerged throughout the Pacific as a result of lifestyle changes, including the trend towards increased consumption of imported foods of poor nutritional quality and a concomitant neglect of traditional food systems. Rates of diabetes and other non-communicable diseases are escalating, while micronutrient deficiencies, including vitamin A deficiency and anemia persist<sup>1</sup>. The presence of both of these types of nutritional disorders has been termed the "double burden of malnutrition". There are also serious concerns in the Pacific about the linked losses of traditional knowledge, culture and biodiversity<sup>2</sup>.

Many varieties of staple food crops are becoming rare, and there are reports of decreasing numbers of different fish and seafood species. However, despite undeniable genetic and cultural erosion in many places, there is still a wealth of traditional and other local foods available in the Pacific Islands, with a tremendous diversity of plant and animal species used for food and numerous cultivars of local crops<sup>1</sup>. Growing and consuming local island foods offer many benefits, including improved health and food security, strengthening of cultural identities, environmental protection, and opportunities for income generation. In addition, growing food crops offers the opportunity for much-needed physical activity with its associated health benefits.

Many health problems of Pacific Islanders could be alleviated by a return to a greater production and use of locally grown foods.

The idea of "Biodiversity for Health and Nutrition," incorporating all these issues, has been discussed globally in order to develop a cross-cutting initiative to help improve peoples' health and standards of living<sup>3</sup>.

The topic "Biodiversity for Health and Nutrition" was discussed by Pacific Heads of Agriculture and Forestry Services (HOAFS) on September 18-22, 2006, during their planning meeting organized by the Land and Resource Division (LRD) of the Secretariat of the Pacific Community (this takes place every two years). In preparation for that meeting, LRD requested some key stakeholders for suggestions as to key points to help guide the discussions. A core list was prepared and members of the Island Food Community of Pohnpei Email Network provided further input<sup>4</sup>. Key outcomes of the HOAFS meeting included recommendations for the implementation of a number of new activities along the lines of biodiversity, health and nutrition, focusing on sustainable management of local resources and locally grown foods, and ensuring that these foods are culturally acceptable, can be easily cultivated and are superior nutritionally.

The purpose of this paper is to present a summary and discussion of these comments and a case study of how different agencies and individuals, beyond the "health sector", have been interacting to further awareness of the importance of local food resources. We hope that this paper will contribute to efforts aimed at increasing production, conservation, marketing/processing, and use of local foods. This paper is also a testament to the regional interest in local island foods and to how people can interact through an email network, providing information and motivation to each other to bring about concrete action and positive outcomes.

### ***Key points to consider in planning and implementing Biodiversity, Health and Nutrition projects and activities***

The following are key areas for consideration in planning and implementing projects and activities promoting biodiversity for better health and nutrition, addressing all levels of society, from communities to state and national governments.

#### ***Inter-agency, participatory and systematic approach***

A more integrated approach will be essential for making an impact on improving health and nutrition through the use of biodiversity. Community members must be included in planning the programs and activities that relate to them. There is an urgent need to improve communication and cooperation among the different agencies which deal with biodiversity, health and nutrition.

#### ***Involvement of a broader network of partner agencies***

Although health departments of Pacific Islands may want to focus more on prevention, they are generally overburdened and under-resourced, and under pressure to deal with immediate problems and curative issues. There is considerable potential for greater involvement of other agencies. Without adequate supply and access to local foods, efforts to promote the consumption of the foods will be ineffective. Agriculture's interest in promoting food security and increasing food production links directly with the nutritionist's need to encourage more local food consumption. Other important potential partners include education sectors and civil society organizations such as churches, women, and youth groups. However, they need encouragement and support.

Education is a key area, and traditional food systems have to be an integral part of syllabuses. Adult education in nutrition often has a limited impact as adults are usually already set in their habits. Educating children should be a primary aim as children are still developing their norms. At the same time, adults need to set a good example in providing local and nutritious food to the children. Awareness efforts, particularly those directed towards adults, such as workshops and printed material (i.e. posters, booklets), need to be accompanied by action projects that focus on interactive demonstrations and the approach of "learning by doing," because people need to become involved in their learning in a personally meaningful way (see Gittelsohn et al this volume). Schools, workshops, sports meetings, fetes, carnivals should all offer healthy local foods to encourage their use.

The business sector should be involved as well. Local food is not always easy to sell. Selling local foods locally at reasonable prices would make it more available for those who do not have access to land or do not grow their own food for other reasons. On the other hand, local food may be expensive. Thus, in addition to the difficulty in processing fresh local food, it may be "unaffordable," especially for large families with limited income.

There are also local realities to consider. For example, in the Marshall Islands the majority of the population resides in two urbanized, overcrowded and land-limited centers, where transportation of local food from the outer islands is inconsistent and difficult and where a wide variety of imported foods (that have replaced local foods) are more easily accessible. The impact of plastic waste (the packaging of these imported foods) strewn in the lagoons or surrounding reefs on fish and seafood has yet to be studied. The specific situation will be different in other countries, requiring interventions precisely tailored to local socio-economic, cultural and environmental conditions.

#### ***Documentation of traditional food systems is a basic first step***

An important and necessary first step in any meaningful intervention for improving the use of biodiversity for health and nutrition is developing an inventory of island foods, species, and cultivars, including local and scientific names and selected primary characteristics, for example availability, seasonality, nutrient content and acceptability. An ethnographic approach for collecting this information has proven to be effective in the Pacific Islands. These regional food lists are needed to improve communication between countries on local foods. Baseline information is needed on the degree of reliance on local foods in each area, for example the proportion of

calories coming from locally produced food compared to imported food. Without this baseline information, it will be impossible to accurately assess the current situation and to measure impact of local food promotion programs.

#### ***Including cultural aspects in all areas of the planning and implementation stages***

Culture plays a key role in local food and human health systems. In order to affect an improvement in the use of biodiversity for health and nutrition, it is important to gain an understanding of cultural beliefs, attitudes and practices related to this topic and to document this in a systematic way in order that these factors may also be considered in policy and planning work related to maintaining and promoting local food systems.

In particular, it should be noted that Pacific Island peoples have built up a diversity of about ten starch foods (including taro, sweet potato, yam, banana, breadfruit) over their time living in the islands and moving between them. That diversity allowed them to draw on different root and tree crops when others were not available. This broad range of starch crops must be maintained, together with the varieties within each species, in order to ensure food security. For example, pandanus varieties in the Marshall Islands vary in

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time to ripeness, flavour, whether they are used raw versus cooked, as well as whether the leaves are used for thatching and handicrafts. Maintaining such genetic diversity and associated traditional knowledge on its use needs support and reinforcement by agencies from the agriculture and forestry sector.

#### ***Scientific evidence to back up local food promotion***

In order to promote local foods a necessary first step is to know the nutrient content of different foods, varieties and cultivars. Too often in the past we said that "local food is better," without giving scientific evidence on nutritional benefits. Data must be communicated in a simple and interesting, but meaningful and powerful way to achieve increased awareness and impact. The "Yellow Varieties Message" used in Micronesia is an example of one such simple but powerful way to communicate the health benefits of the carotenoid-rich varieties of foods<sup>5</sup>. While Pacific Island Food Composition Tables do exist, they are not comprehensive<sup>6</sup>. Although the importance of this work has been often stressed, it is still difficult to access donor support. Resources of various kinds, not just financial, are needed to support the activities of people in the region working in this area.

#### ***Conservation of rare varieties***

We must work to ensure the conservation of rare crop and food tree varieties. One example is Karat, the unique banana of Micronesia, which contains high levels of the provitamin A carotenoid beta-carotene, riboflavin and other nutrients<sup>7</sup>. Although it was once a commonly grown and consumed staple food in Pohnpei, many young Pohnpeians have never seen or eaten it. There is now an active campaign that has received international acclaim, and this is now contributing to an increase in its local production and use<sup>8</sup>. Karat has even been proclaimed the State Banana of Pohnpei. Other examples of cultivars that have high cultural importance, rich nutritional value, and yet are becoming rare, include Simihden, a giant swamp taro of Pohnpei<sup>9</sup>, the Lanlon pandanus of the Marshall Islands<sup>10</sup>, the Tearabukitaba pandanus of Kiribati<sup>11</sup>, and seeded breadfruit<sup>9</sup>.

#### ***Planning and implementing awareness campaigns***

We must take into account the outcomes of past meetings and workshops relating to the use of biodiversity for health and nutrition, so as to take advantage of strategies that have already been identified as being useful in carrying out awareness campaigns. Health nutrition messages should be coordinated through all relevant departments so that a consistent message is delivered to the public.

Despite previous awareness and education campaigns, there are still many people who do not connect their diet and lifestyles with the way that they feel and with their health. It is important to continue stressing the connections between food, physical activity and health. Markets for local foods can be developed by schools encouraging young people to eat these foods, and educating them about their heritage and the place of food in that heritage. A television message such as

"Have you eaten a local food today?" – supported by local business – would underline the importance of local foods.

#### ***Small-scale processing and marketing of local foods***

More work on the preservation and small-scale processing of local foods is needed in times of plenty, to avoid losses and to increase availability of local foods throughout the year and to make them more convenient. In addition to promoting our local foods on the basis of their nutritional values, we need to also promote cleaner products and better marketing. An attractive, well presented and accessible market place has greater appeal and can draw more customers and sell more produce. Increasing economic opportunities is an added advantage of value adding to local foods.

Also needed are simple, low-cost technologies, devices and machines that can shorten and facilitate the process of preserving local food, in order to address seasonal availability issues. For example, the traditional methods of preserving breadfruit and pandanus are very time-consuming. Presently, much local food is wasted as people may not have the time for these traditional local food processing methods. Sun drying is difficult because of flies, and materials for protecting against flies and other insects are expensive.

#### ***Incorporating breastfeeding in the "Biodiversity for Health and Nutrition" framework***

Breastfeeding promotion is crucial for good health and nutrition and needs to have a place in these discussions.

Breastfeeding can lead to lower rates of diabetes, celiac disease, childhood cancer, rheumatoid arthritis, multiple sclerosis, dental caries, severe liver disease, and acute appendicitis. Also, there are many benefits for the breastfeeding

mother, including a reduced risk for cervical and breast cancer, osteoporosis, and other health problems<sup>12</sup>.

#### ***Priority status in national policies and plans***

A final but very important point is the essential need for prioritizing the "Biodiversity for Health and Nutrition" message within national and regional policies. Increasing the priority of this work is essential in order to ensure that local island foods have the place that they deserve among the many development topics that are currently consuming people's attention.

The information presented here is a good example of the kind of valuable product that can be generated when key stakeholders come together in old and new ways to share and build upon one another's ideas. E-mail and online discussion is a good way to consolidate a range of ideas from a group of people with a diversity of knowledge and expertise. This sharing of information and ideas further cements the relationships necessary for developing useful and appropriate strategies for the effective use of biodiversity for health and nutrition.

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## References

1. Coyne T. 2000. Lifestyle Diseases in Pacific Communities. Noumea, New Caledonia: Secretariat of the Pacific Community.
2. Guarino L, Taylor M, and Englberger L. 2004. Conserving genetic diversity of food crops in the Pacific. PIN Newsletter 60. Noumea, New Caledonia: Secretariat of the Pacific Community.
3. Frison E. 2006. Stakeholder Consultation: Cross-cutting initiative on biodiversity for food and nutrition. Rome, Italy: IPGRI.
4. Englberger L, Lorens A, Raynor B, Levendusky A, Paul Y, Hagilmai W, Currie J, Weilbacher P, Mauricio R, Pretrick E, Kostka W, Ehsa E, Andreas R, Billen W. 2005. An NGO approach for addressing the nutrition dilemma: Pohnpei focuses on awareness, food analysis, conservation, and food processing. Pacific Health Dialog. Pacific Health Dialog 12(2) 79-84.
5. Englberger L, Lorens A, Albert K, Levendusky A, Alfred J, and Iuta T. Micronesian staple foods and the "Yellow Varieties Message". Paper presented at the International Plant Genetic Resources Global Nutrition Stakeholder meeting in Rome, Italy, February 16-17, 2006, Rome, Italy. Posted at <http://www.ipgri.cgiar.org/Events/nutrition.htm>.
6. Dignan C, Burlingame B, Kumar S, Aalbersberg W. 2004. The Pacific Islands food composition tables. 2nd Edition. Rome, Italy: FAO.
7. Englberger L, Schierle J, Aalbersberg W, Hofmann P, Jumphries J, Huang A, Lorens A, Levendusky A, Daniells J, Marks GC, Fitzgerald MH. 2006. Carotenoid and vitamin content of Karat and other Micronesian banana cultivars. International Journal of Food Sciences and Nutrition 57(5/6)399-418.
8. Kuhnlein HV. 2004. Karat, pulque, and gac: three shining stars in the traditional food galaxy. Nutrition Review 62(11):439-442.
9. Englberger L, Aalbersberg W, Ravi P, Bonnin E, Marks GC, Fitzgerald MH, Elymore J. 2003. Further analyses on Micronesian banana, taro, breadfruit and other foods for provitamin A carotenoids and minerals. Journal of Food Composition and Analysis 16:219-236.
10. Englberger L, Aalbersberg W, Schierle J, Marks GC, Fitzgerald MH, Muller F, Jekkein A, Alfred J, Vander Velde N. 2006. Carotenoid content of different edible pandanus fruit cultivars of the Republic of the Marshall Islands. Journal of Food Composition and Analysis 19:484-494.
11. Englberger L, Aalbersberg W, Dolodolotawake U, Schierle J, Humphries J, Iuta T, Marks GC, Fitzgerald MH, Rimon B, Kairirote M. 2006. Carotenoid content of pandanus fruit cultivars and other foods on the Republic of Kiribati. Public Health Nutrition 9(5) 631-643.
12. Torgus J. and Gotsch, G. (ed). 2004. The Womanly Art of Breastfeeding. Seventh Edition. Schaumburg, Illinois: La Leche League International.

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*Clarence - It's A Wonderful Life*