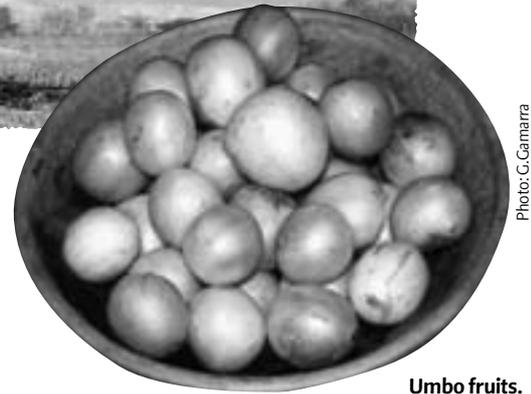




A mature umbo tree growing on the plains of North East Brazil.

Native fruits: from hunger food to delicacy



Umbo fruits.

Guillermo Gamarra-Rojas, Adriana Galvão Freire,
João Macedo Moreira and Paula Almeida

Planalto da Borborema is a region in the State of Paraíba in North East Brazil. Most of the inhabitants live on small rural properties and they depend on selling farm produce, firewood, honey and native fruits for their livelihood. They rear cows, sheep and goats and cultivate crops with a short growing cycle such as beans, cereals and root crops. However, the daily diet tends to be deficient in essential nutrients, particularly those supplied by fruit and vegetables.

The Planalto da Borborema has three ecological sub-regions: the Brejo sub-region found at higher altitude is rather humid; the lower Cariri-Curimatau sub-region has a semi-arid climate; and Agreste - the transitional zone between the evergreen Brejo and the dry Cariri-Curimatau scrublands - has a milder, intermediate climate. All three regions, however, experience long periods of drought which puts the food security of local people at risk. At the same time, the daily diet tends to be deficient in essential nutrients, particularly those supplied by fruits and vegetables.

This context explains the strategic importance of the native fruits traditionally used by farmers. These fruits are well adapted to local environmental conditions, but today most of them are underutilized and local knowledge about their use and management is disappearing. They have also been neglected by research, and as a result little is known in scientific terms about fruit quality and productivity.

During the last ten years, a local development programme has been set up with organizations representing small-scale farmers to try to address some of the problems in the area. Most of these organizations are rural labour unions, united in the *Polo Sindical da Borborema*. The programme's objective is to develop sustainable local production systems based on agroecological principles, by generating, adapting and spreading new social and technical approaches.

In the period 2002 - 2003 a regional study of native fruit was carried out in seven municipalities covered by the *Polo Sindical da Borborema*, making use of the favourable social and organizational context and guided by participative approaches. The work was carried out with technical support from AS-PTA and APNE (*The Association for Plants of the North East*) and financial support from DFID, UK.

A collective effort was made to develop an action plan. First, the concept of native fruits was developed on the basis of the knowledge of the farmers. A meeting was then organized and several topics were discussed, including ways to increase knowledge and formulate research demands. A study group consisting of farmers, students, technicians and researchers was formed. Subsequently, semi-structured interviews and community meetings were organized in order to source, identify, characterize and rescue the knowledge on native fruits present in each one of the sub-regions.

Native fruits

Defining what constituted a native fruit resulted in a long debate among farmers. They concluded there were three categories. First, native fruits from the forest or "those species that are produced by nature itself" were identified as the nearest local concept to the technical term wild native fruits. The second category - naturalized native fruits - are species that have been introduced into the region and are now adapted to local conditions such as species of *Annona*, *Spondias* and varieties of banana and citrus. The third category was "non-native fruits" consisting of species and varieties that have been introduced recently into the area and require crop protection inputs. Non-native fruits can also be the result of plant breeding programmes based on local species, like the dwarf varieties of cashew (*Anacardium occidentale*), or the results of grafting or other techniques.

Farmers based their definitions on different levels of local adaptability and resilience. The native fruits from the forest were

considered to be the most resilient and non-native fruits the least resilient. The farmers realize that native fruits from the forest have a competitive advantage over species that have been introduced from outside the region and require high inputs before they can produce a crop in marginal environments.

Traditional values and new impulses

Farmers identified a total of 44 native fruits in the three regions, of which 29 were strongly preferred. Many of these fruits are found on family properties and require very little care. In nature they play an important ecological role because they supply food and shelter to wild animals. A number of species have become rare in some communities, for example the *ubaia* (*Eugenia uvalha*) and the *jatobá* (*Hymenaea courbaril*). This is partly the result of the wide-scale deforestation that occurred when large-scale cotton and sisal plantations were established in the area, and partly because they are being replaced by other fruits that are commercially more attractive. However, some native fruits are actually thriving in densely populated areas, such as *umbu* (*Spondias tuberosa*) in Cariri-Curimatau and *cajá* (*Spondias mombin*) in Agreste and Brejo. This is the result of local preferences and of the usefulness of the trees: they provide shade, timber, poles, live fences, firewood, medicine, food for bees and farm animals, and have a positive effect on the soil. Only one of the species identified by farmers (*Myrciaria cauliflora*) was useful for its fruit alone. Farmers prefer fruit bearing plants with multiple uses and they attach considerable value to multipurpose species.

There are also native fruits that are cultivated and carefully maintained in enclosed areas such as backyards and in small plots of prickly pear (*Opuntia ficus*). Some fruit species (*Spondias mombin* and *Brasilopuntia bahiensis*) are also used as living fences. In this way the domesticated fruits optimize the use of space, labour and other available resources, such as household waste water. These multi-functional practices and the care for fruit bearing plants have been promoted during group sessions and exchange visits, and are vital for maintaining the local biodiversity.

In areas that experience periodic water scarcity, fruit bearing and other scrubland plants are important during periods of extreme hunger. With the exception of *umbu*, these fruits are generally only eaten during very dry periods and in times of great need. However, the collective process of rebuilding knowledge about native fruits has led to a renewed interest in them. The *umbu* plant played an important part in this change of attitude. In Cariri-Curimatau, the delicious *umbu* fruit is an important source of food and is possibly the only fruit capable of generating significant income for families in the region. Recognizing its potential, a series of community and regional events and exchange visits took place, leading to a process of sharing knowledge on the exploitation, improvement, seedling production and conservation of *umbu*.

One of the most important results of this knowledge exchange was the development of new uses for fruits. Farmers started to think of recipes for candies, jellies, juices and fruit cakes using some local cactus species. In the more humid regions, there were attempts made to make better use of fruits that are normally eaten fresh like cashew and *jenipapo* (*Genipa americana*).

The study and the exchange of experiences on the use and management of fruits, led to the spontaneous collection of seeds and the production and distribution of seedlings. This has enabled the reproduction of fruit species that were nearly extinct in some areas.

Marketing prospects

Many fruits grow spontaneously and, after receiving permission from the owner of the property on which they are growing anyone can pick them. While whole families are involved in collection, children do a lot of the work. However, plants that are cultivated or produce fruits that sell well can only be harvested by the owner.

Limited numbers of species and quantities of native fruits are marketed. *Spondias* and *Myrciaria* sp. have the highest market value, but the marketing of these fruits is difficult as they are collected in small volumes and there is a lack of market information. Usually middlemen collect the fruit from a community and sell it in local and regional markets. This often means that rural families have little financial benefits from these activities. However, farmers are now marketing their products directly at agroecological fairs, a process that adds value to these fruits.

Opportunities

The farmers identified factors that restrict the way local fruits are used at the moment. They want more information on qualitative and nutritional properties, processing and post-harvest management as well as more information on markets.

Spondias species, for example, produce fruits with a relatively high market value, but have only a small share in regional and national markets. The chemical composition and processing properties of the fruits are already known. However, it is necessary to adapt this knowledge to on-farm situation. *Brasilopuntia bahiensis*, a member of the cactus family common in Cariri-Curimatau, also has good development potential. The plant grows well on degraded soils, is widely available and has a long shelf life, high carotene content and good taste. However, its many thorns make it difficult to harvest. A study on its carotene composition is on-going. Much is also known about a related species, the prickly pear, that may prove useful. Other fruits, such as *Psidium araca*, may benefit from technologies already developed for the closely related guava (*Psidium guajava*).

A valuable experience

Gaining knowledge about the chemical and nutritional properties of the fruits, better ways of processing, propagation and multiplication, as well as developing distribution strategies for seedlings and the marketing of native fruits are valuable components of an action plan to make better use of them and preserve fruit bearing plants that would otherwise be underutilized or "lost".

This regional study of native fruit is now being extended to a wider geographical area. The recovery of local knowledge and its mobilization through the exchange of experiences are important elements in enhancing the vitality and securing the sustainability of small-scale family agriculture. Scientific research based on the needs of the local population play an important and complementary role in this process.

Guillermo Gamarra-Rojas. Consultant AS-PTA E-mail: ggamarra@terra.com.br
Adriana Galvão Freire, João Macedo Moreira and Paula Almeida. Consultancy and Services for Projects in Alternative Agriculture AS-PTA. Rodovia BR 104 Km 06 s/n, Caixa Postal 33, Esperança, Paraíba, Brazil. Tel: (55) 83 361-9040/361-9041. E-mail: asptapb@aspta.org.br ; Website: www.aspta.org.br

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