

Footsteps

No.65 DECEMBER 2005

ADDING VALUE TO FOOD



TEARFUND

Adding nutritional value to food

Increasing the nutritional value of available food is often easy to do at low cost, simply by combining foods and fruits in different ways. Here are some useful ideas to improve nutrition for both children and adults.

■ Ideas for healthy eating

Tearfund has worked in Makamba Province, Burundi, for several years with communities and displaced people living in camps as a result of the civil war in Burundi. As this emergency phase comes to an end, many people are now returning to their homes from these camps and from Tanzania. Although the camps are closing, public health educators are still working with local people. They are sharing ideas on how to prepare cheap, nutritious meals from

locally produced foods to help prevent malnutrition.

'The reaction from the community has been very positive, because we only use locally available foods' says Wilson, one of the public health educators. 'People don't always know how to cook meals that are nutritionally rich. Now they do. After teaching people, we take time to go to different houses and make sure people are applying the new techniques they have learnt. So we are finding that it has a good impact.'

'People have learnt how to prepare porridge using palm oil. Everyone has

IN THIS ISSUE

- Adding value to fruits
- Adding value through appropriate technology
- Improving the benefits of the food on our plates
- Ojon oil
- Traditional leafy vegetables
- Adding value through storage
- Market research
- Resources
- Bible study
- The immunisation hand

access to palm oil here,' comments Bosco, another educator. The communities are also taught to prepare more nutritious meals using fish and vegetables. 'We can see the impact on the health of the children. Families come to us and say, "Now this is the result". Even rich people come to test the food and porridge and say, "This is very good quality!" When we see people happy with what we are doing, that's a great satisfaction for us,' says Bosco.

Anastasia is a mother of seven who attended one of the cooking demonstrations. 'Everyone likes the taste of this nutritious porridge. Before, we were able to prepare porridge, and we grew peanuts, maize and sorghum. But now we have learnt how to mix these foods to make our porridge nutritionally rich. We are no longer exposed to sicknesses. Before, the children were sick all the time, but now they are much healthier. We have also learned about sowing crops in lines to make them easier to weed, making compost, using manure and controlling soil erosion.'

Case study from DMT Tearfund, Burundi.

E-mail: Makamba@tearfund.org



Anastasia feeding porridge to her neighbour's child.

Footsteps

ISSN 0962 2861

Footsteps is a quarterly paper, linking health and development workers worldwide. Tearfund, publisher of *Footsteps*, hopes that it will provide the stimulus of new ideas and enthusiasm. It is a way of encouraging Christians of all nations as they work together towards creating wholeness in our communities.

Footsteps is free of charge to individuals working to promote health and development. It is available in English, French, Portuguese and Spanish. Donations are welcomed.

Readers are invited to contribute views, articles, letters and photos.

Editor: Isabel Carter
PO Box 200, Bridgnorth, Shropshire,
WV16 4WQ, UK

Tel: +44 1746 768750

Fax: +44 1746 764594

E-mail: footsteps@tearfund.org

Website: www.tearfund.org/tiz

Sub Editors: Rachel Blackman, Maggie Sandilands

Language Editor: Sheila Melot

Administrators: Judy Mondon, Sarah Carter

Editorial Committee: Ann Ashworth, Simon Batchelor, Paul Dean, Richard Franceys, Martin Jennings, Ted Lankester, Simon Larkin, Donald Mavunduse, Sandra Michie, Nigel Poole, José Smith, Naomi Sosa, Ian Wallace

Illustrator: Rod Mill

Design: Wingfinger Graphics, Leeds

Printed by Aldridge Print Group from sustainable or renewable resources, using environmentally friendly processes

Translation: L Bustamante, S Dale-Pimentil, H Gambôa, L Gray, R Head, M Machado, H Machin, P Mandavela, O Martin, N Nguesso, J Perry, G van der Stoel, L Weiss

MAILING LIST: Write, giving brief details of your work and stating preferred language, to: **Footsteps Mailing List, PO Box 200, Bridgnorth, Shropshire, WV16 4WQ, UK.**
E-mail: footsteps@tearfund.org

Change of address: Please give us the reference number from your address label when informing us of a change of address.

Articles and illustrations from *Footsteps* may be adapted for use in training materials encouraging health and development provided the materials are distributed free of charge and that credit is given to *Footsteps*, Tearfund. Permission should be obtained before reprinting *Footsteps* material.

Opinions and views expressed in the letters and articles do not necessarily reflect the views of the Editor or Tearfund. Technical information supplied in *Footsteps* is checked as thoroughly as possible, but we cannot accept responsibility should any problems occur.

Tearfund is an evangelical Christian relief and development agency working through local partners to bring help and hope to communities in need around the world. Tearfund, 100 Church Road, Teddington, Middlesex, TW11 8QE, UK.
Tel: +44 20 8977 9144

Published by Tearfund. A company limited by guarantee. Regd in England No 994339. Regd Charity No 265464.

Nutritious porridges

Makamba's porridge

- 2 cups water
- 2 tablespoons maize flour
- 2 tablespoons soya or peanut flour
- ½ tablespoon sugar
- 1 tablespoon palm oil

Binga porridge

- 3 cups water
- 4 tablespoons maize meal or flour
- 2 tablespoons roasted bean meal or flour (cowpea or any other bean)
- 1 tablespoon roasted groundnut meal
- 1 teaspoon sugar
- 1 tablespoon moringa leaf powder (stir in after the porridge is cooked)

Frying foods

Using a lot of oil or fat in our diet is not good for our health. However, oil can be an important source of energy, especially for people who struggle with hunger and lack of nutrients.

In Ecuador, South America, a popular traditional food is fried corn which is commonly called *maíz tostado* in Spanish. This has been eaten for thousands of years in the Andean regions and in countries such as Peru and Bolivia.

It is best made with either fresh maize grains that are dried for a day, or with fresh grains that are soaked in water for two hours and then dried before frying. There are many recipes, but here is a typical one.

Use a large pot with a lid. Put 1 cup of cooking oil (such as soya, palm or olive oil)



Photo: Richard Hanson, Tearfund

Nutritious meals help children to grow healthy and strong.

or pork fat in the bottom of the pot and add 4–5 cups of maize when the oil is hot. Stir well with a wooden spoon. Put the lid on and shake the pan every few minutes.

Take great care as hot oil is dangerous and some grains will pop. (This doesn't make pop-corn because the grains used are not the same as for pop-corn.) The stirring makes sure the maize grains are well mixed with oil.

During frying, many grains break open. After about ten minutes, drain off the oil and add seasoning such as salt, onions and garlic.

Maíz tostado is often eaten with *chochos* (lupins – a type of bean). These prove a good nutritional mix. In other countries, any kind of bean could be used instead. Fried corn is also traditionally served with *ceviche* – a fish-based meal.

Recently, scientists have shown much interest in the nutritional value of traditional foods such as *maíz tostado*. If one of your staple foods is maize (or another grain such as sorghum or rice), why not try out this nutritious way of preparing it?

Aurélie Béchoff is a food technologist and has studied with ENSIA-SIARC, CIRAD and University of Quito, Ecuador. She is currently studying for a PhD with NRI on baby foods in Africa.

E-mail: aureliebechoff@hotmail.com

Advice on child feeding

From birth to six months, infants grow best if they are fed only breast milk (although HIV-positive mothers will need special counselling). After six months, other foods must be added. Popular foods are thin porridges and soups because they are easy for young infants to eat. However, these foods are watery and may not meet the infant's nutritional needs, resulting in poor growth.

What to advise families will depend on local customs and on what food is available locally at low cost. Health workers should:

- give just three or four clear and appropriate messages

EDITORIAL

Food is essential to all of us. There is much unfairness about the distribution of food. Although the world has enough food for all, in some countries there is too much rich food available, while in others there is not enough and poor people suffer. This issue looks at ideas for simple, low-cost ways ideas from around the world for adding value to our food. We look at adding nutritional value through frying foods and adding vegetables, herbs and legumes. We look at adding value by preserving and processing foods – either to use in the household or to sell. We look at adding value to traditional foods and products that can sometimes be sold in other countries. Good storage techniques not only improve the value of food but can also avoid the risk of poor health due to mouldy grains. We also look at adding value through the marketing of food products.

Enjoy the appearance of this issue! It will be the last using the present design.

Footsteps 66 will have a new design chosen by readers and use colour photographs. It will consider the topic of human rights.



Isabel

Isabel Carter, Editor

- choose messages that bring the greatest nutritional benefit
- concentrate on messages that not many families currently practise
- agree that all health workers give the same messages.

In shanty towns in Peru, health workers concentrate on three simple messages. These are shared at every clinic visit, including immunisation and growth monitoring visits.

The messages are:

- Give a thick purée. This will satisfy and nourish your baby.
- Add a special food to your baby's meals (chicken liver, egg, or fish).
- Encourage your baby at mealtimes with love, patience and good humour.

Soups are popular in Peru. Families are advised to take out a mixture of the solid pieces (potato, beans, meat, vegetables) and mash them to a thick purée, instead of giving the watery liquid. Animal foods are fairly expensive, but the ones promoted are affordable in this area.

Children grew much better in communities with this programme compared to communities with no programme. This teaching raised the importance of

nutrition in health facilities and used no extra staff. Flip charts and food preparation demonstrations helped to share the messages.

Based on an article by Dr Mary Penny and colleagues (Lancet 2005, Vol 365).

E-mail: mpenny@iin.sld.pe

Peanut butter

Peanut butter is a nutritious paste obtained after grinding roasted peanuts. It is used in cooking many dishes in Africa. It can be added to children's porridge and be used as a spread on bread.

- **Remove** dirty and mouldy nuts.
- **Roast** the nuts over an even heat for 10–30 minutes until they are golden brown.
- **Skin and sort** the nuts – remove the skins by rubbing and winnowing and taking out any burnt or damaged nuts.
- **Grind** the nuts to a fine paste.
- **Mix** a little salt and a small amount of heated cooking oil (this is optional).
- **Bottle** in clean jars or containers with lids.

Adding value to fruits

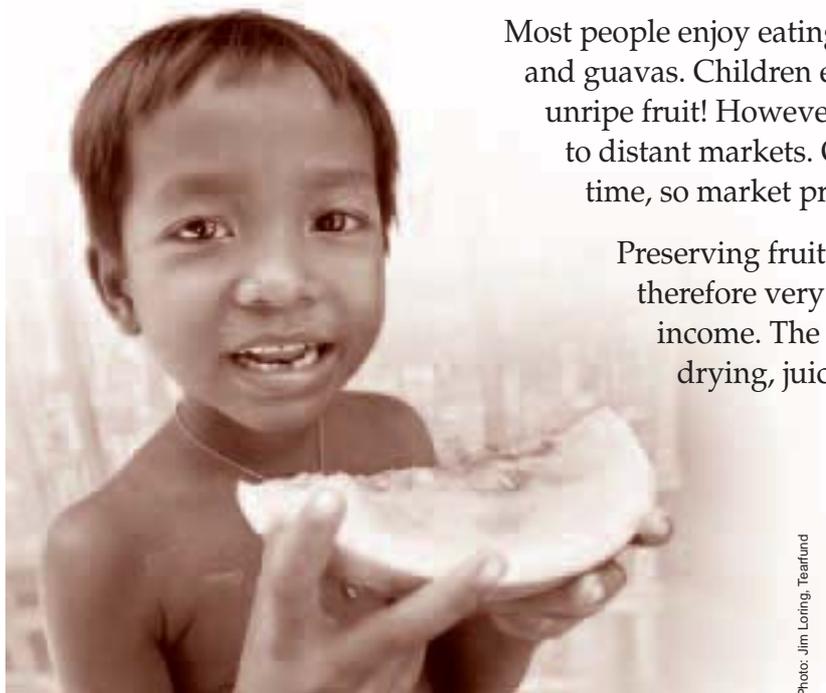


Photo: Jim Loing, Tearfund

Most people enjoy eating ripe fruit such as mangoes, oranges, bananas and guavas. Children enjoy the taste so much that they will often eat unripe fruit! However, ripe fruit does not store well or travel well to distant markets. Other people's fruit usually ripens at the same time, so market prices fall, making it hard to sell at a good price.

Preserving fruit to enjoy its flavour throughout the year is therefore very important to avoid wastage and increase income. The simplest ways of preserving fruit are by drying, juicing and making jams or chutneys.

Drying apricots

Dried apricots are a good source of vitamin A and sugar. Traditionally the branches are shaken so the apricots fall to the ground. The stone is removed and the apricots are dried on flat rocks for six to nine days. This produces dried fruit with a brown colour and tough flesh. To produce higher quality dried apricots, here are some tips:

- Pick apricots by hand when fully ripe to avoid bruising and to get high quality fruit. A cloth or net can be hung under the tree to collect ripe fruit.
- Wash in safe water.
- Split in half to remove the kernel or stone.
- Dip in a solution of preservative to preserve the fruit.
- Dry out of direct sunlight under a drier (see *Footsteps*, issues 21 and 46).
- Pack in clean plastic bags with attractive labels.
- Seal the bags to keep the fruit dry and clean. (See *Footsteps*, issue 57, for a simple bag sealer).

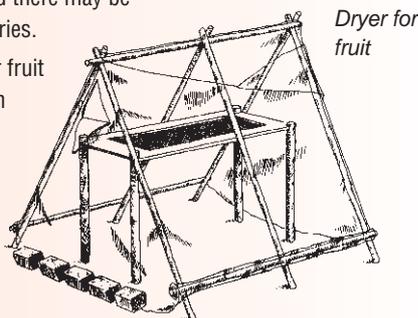
Good quality dried apricots are very popular and there may be opportunities for exporting them to other countries.

These techniques can be used with other, larger fruit such as mangoes, pineapples and papaya which all need to be sliced before treating with preservative. Preservatives are not essential but they help to keep a good colour and enable the fruit to be stored a lot longer.

Adapted from an ITDG Technical brief



Method of picking fruit by hand



Dryer for fruit

Chutneys

Savoury chutneys can be made from all kinds of fruit and vegetables. These are really good as relishes with meals. Unlike jams, it is often better to use fruit that is not fully ripe. Here is one recipe to try. You could also try using green tomatoes, unripe mangoes or pumpkins instead of papaya.

Papaya chutney

- 6 cups finely chopped semi-ripe papaya without skin
- 1 cup chopped onion
- 3 cloves chopped garlic
- ½ cup thinly sliced ginger
- 3 cups sugar
- 1 cup water
- ½ cup vinegar
- 1 teaspoon citric acid (optional)
- 2 teaspoons lime juice
- 1–2 teaspoons chilli powder
- 1 teaspoon salt
- 3 teaspoons cinnamon, nutmeg or mixed spice

METHOD

Cook the papaya, onion, garlic and ginger in the water for a few minutes. Add all the other ingredients. Boil gently for a further 15 to 20 minutes. Pour into glass bottles with lids. Wrap a damp cloth around the jar while pouring in the hot chutney to prevent cracking. The chutney can be kept for two or three years and the flavour will improve with keeping.

Making jams

Many fruits make excellent jams. Recipes differ but the method is always similar. The fruit used should be ripe, clean and chopped into small pieces, with skin or stones removed. The fruit is boiled gently in water until it forms a soft pulp. Sugar and other ingredients are then added and the jam is boiled fast for 5 to 20 minutes. Be very careful to prevent splashes as these will burn the skin.



Test for setting by placing a small spoonful on a clean plate. Allow to cool for two to three minutes. Push with a fingertip to see if it forms a skin and wrinkles. When the jam does this, it is ready. Pour into clean jam jars, wrapping them in a damp cloth first to prevent the jars cracking. Immediately fit a lid or tight cover. Well set jam will keep for one or two years.

Banana and papaya jam

- 3 cups ripe papaya
- 3 cups ripe banana
- 6 cups sugar
- 2 teaspoons lime juice or 1 teaspoon citric acid
- ½ cup water

Pineapple jam

- 5 cups ripe pineapple chopped into small pieces
- 3 cups sugar
- 2 teaspoons lime juice or 1 teaspoon citric acid
- ½ cup water

Mango jam

- 4 cups ripe mango (remove skin and cut into small pieces)
- 3 cups sugar
- 1 teaspoon cinnamon or mixed spice (optional)
- 2 teaspoons lime juice or 1 teaspoon citric acid
- 1 cup water

Guava jam

- 6 cups chopped ripe guava
- 6 cups sugar
- 2 teaspoons lime juice or 1 teaspoon citric acid
- ½ cup water



Preservatives

For household production, when food is to be used soon, there is no need to use preservatives. However, for small businesses, the use of preservatives can help food to stay fresh longer.

Several preservatives can be used with fruit. Sodium metabisulphite is often used for small-scale food processing. This prevents or reduces the browning of fruits and vegetables. A typical concentration for treating fruit and vegetables would be 6g of sodium metabisulphite dissolved in 10 litres of water. However, in some countries its use is restricted.

Citric acid is a popular, cheap and safe preservative. It is used to preserve fruit juices and jams. It also helps to control browning of fruit and vegetables.

Sodium benzoate is used as a preservative in fruit juice, drinks, jellies, and pickles.

Pages compiled by Isabel Carter

Introducing squashes

People will often spend money on commercial sodas. However, these are very expensive and have few nutritional benefits. For the same price as one small bottle of soda, try making these simple fruit squashes, full of vitamins, that will provide a family with delicious drinks for several weeks.

Passion fruit squash

- 2 cups passion fruit flesh with seeds
- 6 cups sugar
- 2 cups water
- 2 teaspoons lime juice or 1 teaspoon citric acid

METHOD

Dissolve the sugar in the water. Heat gently and add the passion fruit. Bring to the boil for two minutes and then remove from heat. Add the citric acid. Cool and pour into bottles, using a fine sieve to remove the seeds. Store the juice in clean, airtight bottles. To drink, dilute with plenty of safe water.

Orange and lemon squash

- 3 oranges and 2 lemons
- 5 cups sugar
- 5 cups water
- 4 teaspoons lime juice or 2 teaspoons citric acid

METHOD

Wash fruit and peel off the outer skin using a sharp knife so that the bitter white pith remains on the fruit. Place peel and water in a pan and boil for four minutes. Add the sugar and citric acid and stir to dissolve. Halve the fruit and squeeze out the juice and add to the cooling pan. Cover and leave overnight. Strain into clean, airtight bottles. To drink, dilute with safe water. If possible, use the sweet peel for cakes or puddings.

Lime squash

- 3 cups lime juice
- 6 cups sugar
- 3 cups water
- 1 teaspoon citric acid (optional)

METHOD

Wash the fruit and cut it in half. Squeeze out the juice by hand or with a lemon squeezer, removing the seeds. Place the juice and water in a pan and bring almost to the boil. Add sugar and preservative and boil for just two minutes. Pour the hot squash into clean, airtight bottles.

Lemons can also be preserved in this way but the squash will not keep as long as lime squash.



Adding value through appropriate technology

Many women process food using traditional methods, which are often time-consuming. New technologies may improve processing, but are not always adopted, especially in rural areas. Although the technology seems appropriate to the people who design them (usually men), they are often not appropriate for the women who use them.



Photo: Jim Loring, Tearfund

Women's work can be very time consuming.

In Dozéré village in Ivory Coast, a study was carried out to look at ways of improving food processing. Researchers stayed in the village, observing and taking part in community activities, listening to people and asking questions. They observed women using different ways of food processing, and discussed any problems. The women's ideas for improvements were discussed and prioritised. Their main problem was the hard and tiring work of extracting oil from the fruit of the oil palm (*Elaeis guineensis*).

Palm oil is an important oil, particularly in rural West Africa. Most is used in the home, while some is sold in local markets. Men cut the fruit from wild palms. The women cook it in oil drums. Young men usually pound it with pestles in a big mortar. The women then mix the mass of fruit pulp and seeds with water. The seeds settle to the bottom. The fibres are washed and squeezed to remove the oil. The resulting mixture of oil and water is boiled for about two hours.

After cooling, the palm oil is skimmed off. The women find the hand-squeezing of the fibres very hard work.

Criteria for improvement

Considerable care needed to be taken in finding the right improved technology. The technology needed to reduce work and bring in more money. The equipment had to be strong and reliable and able to be maintained locally. Women needed to be able to operate the technology and to pay for it – each woman could afford to pay just US \$6 a month.

The first step was to see if anyone in the region knew of another way of extracting oil. However, none was found. The next step was to seek information from research institutes and literature on

small-scale palm oil extraction. The screw press designed by the Royal Tropical Institute (KIT) in Amsterdam met the criteria best.

Women test and adapt

A sample press was built by local manufacturers near Abidjan. The women tested it for a year. They had many ideas to improve it. The central cage was replaced by a lighter one. Handles were added to make it easier to carry. Two more cooking and reheating drums were added to the existing two, so more women could work at the same time.

After trying out the machine, the women agreed to buy the screw press. They did this collectively, by paying into a fund over six months. The women's leader was responsible for the press, while three young women trained people using it for the first time. For this service they were given a small amount of the oil produced.

With the new press, about 11% more oil could be extracted and the amount of fuel wood needed was reduced by a quarter.

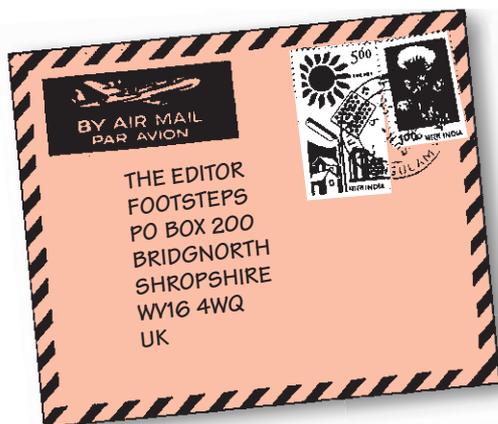
Technical advice

It is usually better to buy food-processing equipment from local suppliers. They can service or repair the equipment, their costs are generally lower than imported equipment and they can obtain spare parts faster and more easily. However, sometimes the quality of their work and their ability to repair equipment can be inadequate. Improving the range and quality of food processing equipment, particularly with the use of stainless steel parts (to avoid rusting), are seen as priorities by development agencies and government institutions in many countries.

People who want to buy imported equipment have a number of problems. First, they may find it difficult to get useful information. Many overseas suppliers are reluctant to meet small orders or unwilling to export their equipment. In addition, importing goods can be very complicated and expensive.

However, information about equipment is increasingly available on the internet. People wanting to process food can ask for advice from development agencies, manufacturers' associations or university food science departments. If the decision is made to import equipment, be sure to specify exactly what is required (many manufacturers have a range of similar products), to describe the amount of food to be processed (in kg or litres per hour) and the type of food to be processed. It is a good idea to order spare parts at the same time.

Peter Fellows is Director of Midway Technology which provides advice and consultancies for small-scale food processing. E-mail: midwaytechnology@peterfellows.freeserve.co.uk (See page 14 for more details.)



Cooking sorghum

Sorghum is a widely used grain crop in many parts of Africa. It is often used as a grain that bridges the gap at times of food shortage. It is ground into flour and used as a staple food to make into *eba*, a thick porridge eaten with vegetables and meat. However, some households may find sorghum too expensive to grind and go without food because they have no flour. But sorghum grains can also be cooked whole – we call this *choko*. The grains are washed and boiled until they break open.

Foods such as beans, groundnut paste and fresh vegetables are added, together with spices and palm oil. This provides a good nutritious diet for the family. Why not try cooking *choko* using sorghum or other similar grains?

Dzever Ishenge
PO Box 684, Makurdi, Benue State
Nigeria

Ezang: a multi-purpose tree

Ezang is a large forest tree (*Ricinodendron heudeloti*) also known as *gobo*, *ezezung* or *njansang*. Its fruit contains black seeds with very hard shells. Inside these seeds are kernels, which are highly valued throughout Cameroon. They are very nutritious and have many uses. The kernels can be ground and added to stews and relishes to enhance their taste. *Ezang* oil is used to make cosmetic products. *Ezang* bark also has medicinal properties for treating illnesses like anaemia, diarrhoea and coughs.

However, it is difficult to extract the kernels and the oil. Our organisation is

now providing training and booklets on cultivation, processing and commercial uses.

Volontaires au Service du Developpement
BP 14920 Yaoundé
Cameroon

E-mail: bizang_vsd@yahoo.fr

Diobass Platform

The Diobass Platform is a place where farmers and livestock breeders meet with scientists and development workers. They share local practices and knowledge about their animals and crops. This information is shared through a bulletin to stimulate wider exchange and link farmers who face similar problems. We will be happy to e-mail readers a copy of the bulletin (French only) on request.

Innocent Balagizi
Plateforme Diobass au Kivu (DRC)
BP 274 Cyangugu
Rwanda

E-mail: plateformediobass@yahoo.fr

Less water was needed for washing. The oil was of better quality and stored well. Using the press made the work much easier than using the traditional method.

Confidence grows

At first, just a fifth of the women used the new press to extract their palm oil. However, within two years nearly all the women used the press. At first, many women processed only small amounts of fruit, fearing the oil would not keep as long as the traditional methods. Soon, however, many women used it to process all their oil palm fruit.

Sharing information

A reliable local manufacturer was found that could produce the press to order. Women's leaders, project workers, technical school directors and many others were invited for a demonstration day. Word began to spread. The manufacturer sold two presses in the first year and eight in the second. Hopefully this will provide a good basis for spreading this improved technology.

This approach was a very careful one. The technology was developed and tested together with the end users. Women shared their specific problems, tested the technology and suggested improvements. As in most situations, the end users of the technology are the best people to work with.

Adapted from a longer article by Barbara Böni who carried out this research with the Institute of Food Technology, Switzerland. She now works as a consultant with UNDP in Vietnam.

Technology needs to be appropriate for the purposes of the women using it.



Photo: Tearfund

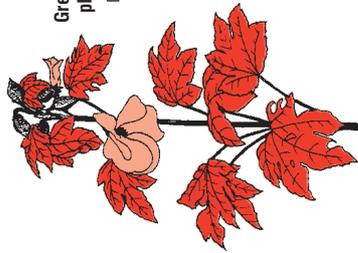
Improving the benefits of the food we eat

To add to the nutritional value of a meal, always try to mix the staple food (such as maize, rice, plantain, potato) with some kind of vegetable, beans, meat or nuts as a relish. Even small amounts of relish add taste and nutritional value (vitamins, minerals, protein). Remember that even though women and children may eat less staple food, everyone needs the same amount of relish.

Some ideas for relishes

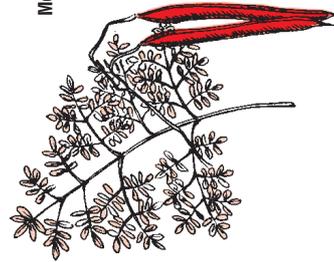
Green leaves, edible wild plants and flowers, herbs

Dark green vegetables, especially many traditional plants, are good sources of vitamins A and C, which help protect against illness. Herbs add flavour and can be gathered wild or grown.



Moringa leaf sauce

The leaves of the moringa tree can be used to make a nutritious sauce. Steam two cups of fresh leaves for a few minutes in one cup of water. Add salt, chopped onions, butter or other seasonings according to taste.



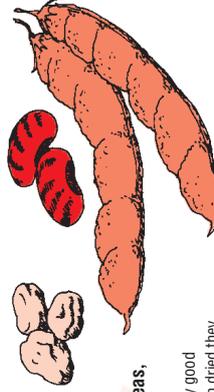
A tablespoon of palm oil

Oil adds flavour and is good for children who are growing. You can also make cooking oil from crushed groundnuts, soya beans or moringa seeds.



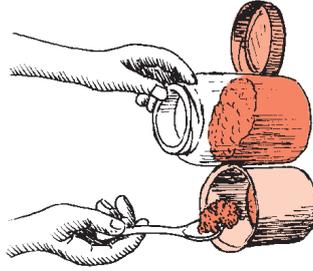
A handful of lentils, peas, groundnuts or beans

All kinds of pulses are very good sources of nutrients. When dried they can be stored for a long time.

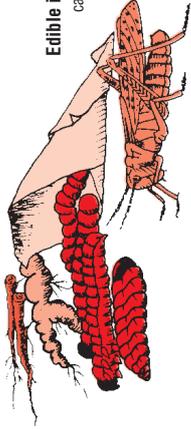


Moringa leaf powder

Moringa leaves can be dried (out of direct sunlight to preserve vitamins) and crushed into a fine powder, which can be stored and added to soups and sauces. The powder is an excellent source of vitamin A. Add two or three spoonfuls of powder to rice, soups and sauces just before serving (see recipe on page 2).



Edible insects such as ants, caterpillars, grasshoppers and locusts are often high in protein and vitamins.



Good hygiene

- Wash hands well with soap and water before preparing food.
- Make sure all pans, dishes and tools used in preparing food are clean.
- Keep uncooked meat and fish away from cooked foods.
- Serve food fresh – don't leave cooked food to sit around before eating. Milk, fish, cooked meat and cooked rice will spoil quickly.
- Flies carry disease, so always cover food to keep them away.



Preparing food

- Don't overcook or over-boil vegetables as this removes many vitamins.
- Brown unmilled rice and wholewheat flour contain more nutrients than white rice or flour.

Milling rice

Rice grains need processing before they can be eaten. The outer, inedible husk needs to be removed by pounding by hand or in a mill. The brown rice grains consist of an outer layer of bran and an inner white grain. Rice is usually milled to remove the outer layer to give white, polished rice. This is the preferred rice that is eaten by millions of people each day. However, milling removes a lot of valuable nutrients. Brown unmilled rice, like brown wholewheat flour, is a much better food nutritionally and has a delicious nutty flavour. However, brown rice does not store as well as polished rice. In India, rice is traditionally steamed or boiled for a few minutes, dried and then husked. This loosens the husks, making them easier to remove, and reduces the loss of nutrients during polishing. The husking also prevents the rice from spoiling during storage. This process is known as *parboiling* and is widely used throughout India.

Ojon oil

by Osvaldo Munguia and Judith Collins

The Miskito people in Honduras have traditionally always used batana oil – extracted from the nut of the American palm (*Elaeis oleifera*) – as a skin and hair treatment. It encourages thick, shiny hair and repairs damaged hair. Oils for cooking are also extracted from both the nut and husk, and the husk is used to make a type of porridge. After extracting the oil, the waste products provide a nutritious feed for the local pigs.

The palm grows wild in the tropical rainforests of Central and South America. Many palm trees grow in the isolated wetlands of Rio Kruta, a very poor region. Each tree produces from 10 to 20 very large bunches of fruit each year, from which 2 to 4 litres of raw oil can be extracted. The fruit is boiled and then pounded to remove the orange outer shell. The nuts are washed, sun-dried and cracked using a stone to release the kernel. These are cooked over a fire until the oil is extracted. Finally the hot oil is poured into glass bottles where it cools into a thick paste. During the 1980s the national NGO, MOPAWI, began to work with the communities to increase sales of batana oil outside the immediate area. However, despite their efforts, sales never rose above 2,000 litres a year.

Outside investment

In the late 1990s a Canadian businessman visited Kruta after noting the positive effects the oil was having on the hair of his Honduran wife. He had a lot of experience in producing beauty



Transporting batana.

products. Working with MOPAWI, his company began to explore commercial possibilities for the oil, now called 'Ojon' (the Miskito name for the palm). After several years of research the company placed their first major order for 4,500 litres. They offered to pay over twice the previous market price for the raw oil. In 2004 production totalled 30,000 litres and in 2005 demand is expected to be as high as 50,000 litres. This will benefit over 1,000 producers and their families.

Previously, producers would paddle their canoes for up to three days each way in order to sell small quantities of oil in the nearest town. Now there are six local pick-up points. From Honduras, the oil is sent to a small village in Italy where it is made into luxury hair products that can now be bought in many parts of the world. (For information, see www.ojonhaircare.com.)

Producers have been given safety equipment to use when handling the hot oil and trials are under way testing different types of stoves that use less firewood. Both MOPAWI and the Ojon Corporation are focusing on the sustainable management of the forests where the palm grows naturally.

Quality of life

The communities in Kruta have seen significant improvements in their lives in terms of food security, housing and health. A scholarship fund for children from the area has also been established from the corporation's profits. MOPAWI still co-ordinates all the purchasing

Fairtrade

The Fairtrade Labelling Organisation (FLO) is responsible for Fairtrade certification for products. Their website is www.fairtrade.net.

For non-food products, an organisation itself can become fairtrade registered.

Website: www.ifat.org/theftomark.html for more information.

arrangements for the oil. However, with training and the strengthening of local organisational capacity, it is hoped that producer associations will take over this role in the future. Other plans for the future include working with producer associations to obtain organic certification for their product and investigating possible fairtrade status. This guarantees a fair and stable price for producers and helps reach markets in the North.

The producers have chosen as their slogan '*Ojon ba Dawan yammika kum sa*', which means 'Ojon is a blessing from God'!

Osvaldo Munguia and Judith Collins work for MOPAWI in Honduras. Osvaldo is Director and Judith is an Environmental Adviser assigned by Tearfund, UK.

E-mails: munguiaoe@yahoo.com
S-J.Collins@tearfund.org

Discussion questions

- What traditional food or medicinal products are grown and used in our area that could have a much wider market?
- How could we encourage research into possible markets without losing control of the product to outside commercial organisations?
- MOPAWI has played a crucial role in developing Ojon, ensuring that the benefits remain with the local producers and are sustainable. What organisations could help us in a similar way?
- Do we have food or other products that are produced without using chemicals or in ways that treat the producers well? Could we seek either organic status or Fairtrade status for our products?

Traditional leafy vegetables

by Dr Patrick Maundu

The Kenya Resource Centre for Indigenous Knowledge (KENRIK) has documented all food plants in Kenya. Their work shows the potential of indigenous food plants in improving food security. In Africa, around 4,000 species of plants have the potential for producing food, with about 1,000 species used as leafy vegetables.

Traditional vegetables are usually rich in nutrients such as vitamin A and iron – often lacking in the diets of children and pregnant women. However, there are many things that limit their use.

- People often have a negative attitude towards these vegetables and fail to appreciate their taste, preferring 'modern' foods.
- It can be difficult to obtain seeds or cuttings.
- Sales in local markets are often poor.
- Little research has been carried out and there is a general lack of knowledge about their potential.
- Many people, especially in the towns and cities, do not know how to prepare them. In fact, this knowledge is being rapidly lost as older people die.
- Agricultural policies usually emphasise export cash crops and rarely fund work with traditional foods.
- Some varieties, especially cultivated species such as cowpea, may disappear as they are replaced by commercial varieties. These varieties need to be collected, documented and preserved for the future.

To use most of these vegetables, the green leaves and young stems are collected, washed and chopped. They are usually either steamed or boiled with other leafy vegetables and then fried with spices, onions and tomatoes. There are plenty of opportunities for new income-generating ideas to produce products using traditional leafy vegetables, especially in ways that make them more convenient to process, market and prepare.

KENRIK's work has identified some helpful lessons:

- Promoting the nutritional value of traditional leafy vegetables has a good impact on encouraging their use.
- Simple techniques for seed production and packing are easy to use and share.
- Simple selection led by researchers can rapidly lead to large increases in yield or the production of varieties with required characteristics.
- Simple techniques to preserve leafy vegetables, such as drying, help make these vegetables available during times of low production.



Photo: Isabel Carter

Traditional vegetables are usually rich in nutrients such as vitamin A and iron.

- Sharing recipes with restaurants in urban areas can increase sales.

Dr Patrick Maundu is head of the Kenya Resource Centre for Indigenous Knowledge (KENRIK), PO Box 62876, Nairobi, Kenya. E-mail: p.maundu@cgiar.org

Processing shea butter

Shea butter nuts are another traditional wild food, whose value for food and cosmetic purposes has been more widely realised in recent years. Shea butter comes from the shea tree – *Vitellaria paradoxa* or *Karite* and is much valued for its benefits to skin. Here is some advice from women experienced in producing shea butter, and from experts, to improve both the quantity and the quality of the butter extracted. This is particularly important if the butter is to be sold for export. There is a rapidly growing market in Europe for shea butter.

- Gather the fruit when it is fully ripe. Do not cut it from the tree or shake the tree to make it fall. Wait for it to fall, as fully ripe fruit gives the most oil.
- After removing the pulp, cook the nuts in boiling water rather than smoking them. This will improve the quality of the butter.
- Dry the nuts quickly in the sun to prevent mould, turning them frequently.
- Sort the nuts to remove any which are black, damaged, broken, or have sprouted. Good nuts are hard, whole, clean, light brown and smell pleasant.
- Roast the nuts, making sure not to burn them.
- Process the nuts with a grinder, pestle or between stones to produce a brown paste.
- Add clean water and continue kneading until a cream-coloured paste forms.
- Extract the oil using a press (for the best quality butter) or by heating with water until the butter rises to the top.
- To make the melted butter clearer, add the juice from two to three lemons to 25 litres of boiling butter.
- Keep the butter in airtight containers. Fill them fully and close the containers tightly, making sure no air gap is left. Use plastic sheets as lining to help protect the butter from air and light.

Taken from *Les Fiches Techniques des paysannes africaines* by Marie-Thérèse Abela. Published by GRAD.

Adding value through storage

Effective storage of food helps provide security and nutrition for households. It also enables food to be sold at higher market prices once the harvest period is past.



Photo: Geoff Crawford, Tearfund

Grain storage

For safe storage of grains, thorough drying is essential. Mould can develop in grains that are not dried properly before storage, or that become damp during storage. Many people think this is just a nuisance, making their food taste less good. However, mouldy grains can be much more serious. They can contain chemicals known as *afatoxins*. This chemical is stored in the body. It stops children from growing to their full potential and makes them less resistant to disease. It is one of the major causes of liver cancer in adults in some countries.

The main crops likely to be affected are maize and groundnuts. Research by the University of Leeds with farmers in Guinea found that several simple measures could improve the drying and storage of groundnuts, reducing *afatoxin* levels by more than half. The measures included:

Hand sorting Removing mouldy and damaged groundnuts before storage.

Drying on mats Locally-produced fibre mats, rather the traditional method of spreading nuts on the ground, improved the drying process.

Sun drying Farmers were shown a simple test for dryness – shaking the seeds to listen for the nuts moving.

Natural fibre sacks Plastic or synthetic bags makes grains 'sweat' and encourage mould. Sacks made from natural fibres, like jute, are better.

Wooden pallets Storing sacks on the floor or stones allows damp to rise. Locally-made wooden pallets prevent this.

Insecticide Insect pests encourage humidity and spread fungal spores. A small quantity of insecticide sprinkled on the floor under the wooden pallets keeps pest levels low. (Neem leaves could also be used.)

Adapted from an article by Professor Wild et al, University of Leeds, the Lancet, Vol 365.

'Truth label' for rice

Good seed is vital for the production of rice, our staple crop. The quality of the seed makes a great difference to production. HEED, an NGO in Bangladesh, is helping provide high quality seed to poorer farmers in the North East region. They are developing a sustainable farmer-to-farmer seed exchange system. They provide training and register farmers willing to produce quality seed with a 'truth label'! This network of seed producers has steadily increased from 5% to 30% of farmers in the 161 villages in the North East area of Bangladesh within two years.

For seed to carry the 'truth label', farmers have to do the following:

- Dry grains in the sun for 4–5 days.
- Check for dryness with teeth. If the seeds crack cleanly, the grains are dry.
- Preserve rice seeds in airtight glazed clay containers, plastic drums or tin containers, adding dried neem leaves or naphthalene (moth balls).
- Store the seed containers in a dry place, which does not suffer flooding. Check regularly and if necessary dry the seeds again.

Article written by AM Chashi, the Agricultural Co-ordinator with HEED Bangladesh.

Useful tips to prevent pests

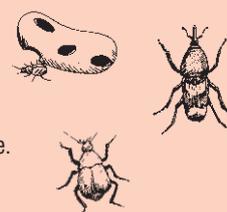
- Turn sacks twice every day for the first two weeks. Most pests need to fix themselves into one position to begin eating into a grain. Regular turning prevents this and results in pests dying of hunger.



- Before sealing an airtight storage container, light a candle stub, making sure it has room to burn without setting fire to the grain. Seal the container. As it burns, it will quickly use up all the oxygen, killing any pests. It will then go out after a few minutes.



- Try mixing small quantities of wood ash or edible oil (palm oil is good) with beans before storage to prevent pests. Wash the beans before use.



Market research

by Alison Griffith

Market research is a key tool for helping small producers to sell their products. Marketing is about selecting and designing products that are likely to sell, rather than making products without checking to see if they are likely to sell. There are several key stages to consider.

Identify customers Who are the expected customers? Are they men or women, children, restaurants, institutions, international buyers? What do they buy at present? What might influence their choices? This might include attractive packaging, price and reliable supplies.

Market surveys Find out what these customers want. Design a simple questionnaire to use with sample groups.

You need at least 20 people and ideally 100 to carry out a reliable survey. Use the survey with people who represent the likely customers. Don't choose people you know. Once the survey is complete, count up and analyse the results. For example, 45 out of 60 interviewees said they preferred mango (75%) to other dried fruits.

Work out the potential demand by combining these findings with the size of the target group. Look at the likely competitors. For example, if 5% of school children surveyed said they are likely to buy a fruit drink each week and there are 15,000 school children in the town, the total market among school children will be 750 each week ($15,000 \times \frac{5}{100}$). There are two competing producers. This will help to plan production of appropriate quantities.

For small producers, getting to know their customers, serving them better and gradually expanding is the best way forward.

Market share Most products are produced by a number of different producers who compete with each other. The market share for any one producer will depend on the number and size of their competitors and the pricing and

presentation of competitive products. To be successful, producers have to think of ways to make their particular product more appealing.

Test the market It is a good idea to test your products to find out if the quality is acceptable, if the price is right and if the selling location is appropriate. Test using free samples, or try selling samples. Products of very high quality may sometimes be too expensive to sell.

Promotion There are many ways to tell people about products. Advertising can seem expensive. If you are designing posters, adverts or leaflets, consider:

- What is new or different about your product?
- Where will people see the message?
- How will you attract their attention?
- Do they have enough information to find the product?



Photo: Mike Webb, Tearfund

The most important way of promoting any product is to have satisfied customers who tell others about the products and services.

Develop competitive advantage

Small producers with really good ideas for new products will find that others will always copy them. It is important to keep thinking of new ways to keep customers happy. Keep improving! Develop new ideas to keep one step ahead.

Adapted from two articles written by Alison Griffith in Food Chain, Issues 30 and 31, produced by ITDG, Bourton Hall, Rugby.

Market survey form for dried fruit snacks

Do you buy snacks in the street? Yes No

How often? Daily Weekly Monthly

Where else do you buy snacks?

What kind of snacks do you like?

Do you buy dried fruit snacks? Yes No

If yes, what do you like about them? Taste Healthy Price Other

If no, why not?

Which fruits do you prefer? Mango Papaya Pineapple

What would you pay for a pack this size? 25c 35c 45c

Books Newsletters Training materials

Small Scale Food Processing – a directory of equipment and methods

by S Azam-Ali, E Judge, P Fellows and M Battcock

This is a new revised edition from ITDG Publishing of a useful reference guide on food processing and preservation. It is aimed at business advisers and trainers, development workers and food processing businesses. It examines the principles of food preservation and processing. It looks in detail at all kinds of processing equipment. Essential information is included on quality control and hygiene issues, and the packaging of processed food. The guide contains a good directory of suppliers, manufacturers and equipment.

This book costs £29.95 and can be ordered from:

www.developmentbookshop.com

HIV Counselling and Testing for Youth

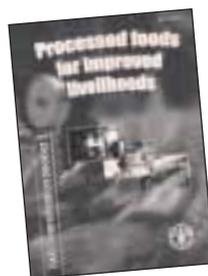
A third of those who request HIV tests are young people. They often have different needs from adults. This easy-to-use 92-page manual from Youthnet is designed to help health workers and counsellors improve their skills and use youth-friendly approaches. It also contains information on contraceptive options, other sexually transmitted infections, and tips and role-plays – to use with young people – on abstinence and being faithful. It is available free at: www.fhi.org

To request a printed copy, please e-mail: youthnetpubs@fhi.org

Processing Foods for Improved Livelihoods FAO Diversification Booklet No 5

by Peter Fellows

This booklet provides a useful overview of different food preparation and processing methods. It considers supplies, packaging, marketing and appropriate



equipment and methods. Other booklets in the series look at beekeeping, post-harvest, trees and poultry. Order from:

FAO
Viale delle Terme di Caracalla
00100 Rome
Italy

E-mail: publications-sales@fao.org
Website: www.fao.org/catalog/inter-e.htm

or
The Stationery Office
Website: www.tso.co.uk

Growing Citrus Trees under Challenging Conditions

by Dr Roger Sharland

This is a practical booklet outlining the steps of growing citrus in difficult conditions, with sections on nursery techniques – including budding, transplanting and pests and diseases. It costs KSh 200/- per copy. Order from:

REAP (Rural Extension for Africa's Poor)
PO Box 76584, Yaga Centre
Nairobi 00509
Kenya.

E-mail: REAP@maf.org

Useful contacts

Agromisa is a Dutch organisation providing information and advice on small-scale sustainable agriculture to support and strengthen self-reliance of the rural populations in the South. They have an excellent series of nearly 40 Agrodoks – practical manuals on all aspects of sustainable agriculture available in English, French, Spanish and Portuguese. They also provide a free technical enquiry service.

Postbus 41, 6700 AA Wageningen, Netherlands.

Website: www.agromisa.org

E-mail: agromisa@agromisa.org

The Natural Resources Institute (NRI) has produced a number of practical guides on oil extraction, fish drying and food processing. These are now all available on www.developmentbookshop.com

The NRI website is: www.nri.org

Practical Action (the new name for ITDG) helps poor people to access and develop the skills and simple technologies that will enable them to build a better future. They have a series of useful technical briefs.

Bourton-on-Dunsmore, Rugby, Warwickshire,
CV23 9QZ, UK

Website: www.practicalaction.org

Science and Development Network raises awareness of the potential contribution of science and technology to social and economic development.

Website: www.scidev.net

Midway Technology Associates provide technical and business support to small and medium scale enterprises. They have many years' experience in food technology, food processing equipment and business management. They aim to help build sustainable systems

that can provide long-term benefit. Areas of work include support to institutions that promote engineering or food processing, development of local training and consultancy skills, advice on processing agricultural products, local manufacture of equipment and packaging. Contact:

Midway Technology, 19 High Street, Bonsall,
Derbyshire, DE4 2AS, UK

E-mail: midwaytechnology@peterfellows.freeserve.co.uk

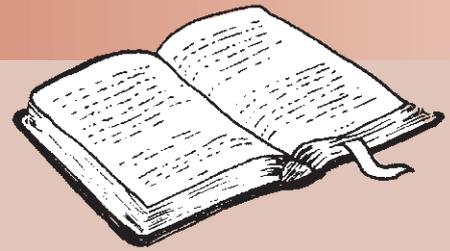
The Henry Doubleday Research Association (HDRA) promotes and researches organic horticulture and agriculture in the UK.
Website: www.hdra.org.uk

HDRA provide a tropical advisory service:
HDRA, Ryton Organic Gardens, Coventry,
CV8 3LG, UK

E-mail: ove-enquiry@hdra.org.uk

BIBLE STUDY

God's provision of healthy food



Read Genesis 1:11-13 and Genesis 1:29-31

- How does God provide for our need to eat?

Discuss the main foods that are eaten in our area. How many of these come from seed-bearing vegetables or trees?

- Why did God create us with the need to eat?
- Who does God make a covenant with regarding food?

God first chose a vegetarian diet for us. He only gave permission for people to eat foods such as grains, nuts and fruits from vegetables and trees. However, after the flood he gave permission to eat meat. People were told not to eat blood or fat, and only to eat 'clean' meat from animals that feed on plants or insects, rather than unclean meat from scavengers. (See Leviticus 11.) The food

laws were given to mark the Israelites as God's people, but they were good for the people's health as well.

Read Genesis 9:1-5

God makes a new covenant concerning food, this time with Noah and his family.

- What has changed from the time when the first covenant was made?
- What new food was available? Why do you think there has been a change?
- Why do you think God told people not to eat meat with blood in it?
- Why does this law not apply to us today?

Financial Management for Emergencies

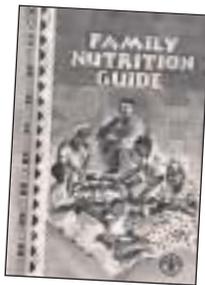
This is a useful, free toolkit aimed at supporting programme managers working in emergency situations, and often managing budget requirements for different organisations.

Website: www.fme-online.org

Family Nutrition Guide

by Ann Burgess and Peter Glasauer

This new guide is for health workers, nutritionists and other community and development workers. It aims to provide information on preparing good, nutritious and safe meals for all family members and to motivate people to adopt healthy eating habits.



The guide is divided into 11 topics that cover basic nutrition, family food security, meal planning, food hygiene and the special feeding needs of children, women and men, and of old, sick and malnourished people. Each topic has two parts: **Nutrition notes**, providing up-to-date knowledge, and **Sharing this information**, describing how to prepare participatory sessions.

The book has 125 pages and is available in English only. It costs US \$26 and can be obtained from FAO booksellers, ordered from the FAO website or downloaded free of charge.

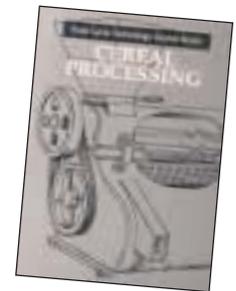
See page 14 for contact details.

contacts. Each costs £7.95 (US \$15). For more information contact:

ITDG Publishing
E-mail: orders@itpubs.org.uk
Website: www.itdgpublishing.org.uk

Food Cycle Technology Source Books

Each book in this series from UNIFEM provides useful practical information on one aspect of food processing. The titles include: *Cereal processing*, *Drying*, *Fish processing*, *Storage* and *Oil processing*. Each contains ideas for improvements, case studies, equipment and useful



Financial reporting to beneficiaries

Reducing fraud is key to making sure funds reach the intended beneficiaries. In 1995 the Ugandan government began to use the local newspapers to publish financial information about grants to schools. Local people then had details of monthly transfers so they could monitor officials' work. By 2001 the average primary school was receiving 82% of its funding, compared to just 25% in 1995. An amazing improvement!

By having such access to financial information, beneficiaries can make sure that funds are spent on their real priorities. This reduces the risks of fraud and of funds being spent on inappropriate activities. It encourages meaningful participation between NGO staff and the people they aim to help.

The NGO Mango has launched the **Who Counts? Campaign**. This encourages NGOs to tell the people they aim to help how much money they are spending. Look at the website www.whocounts.org where there are practical guides and case studies. Please consider signing the campaign and encouraging other NGOs to do the same.



The immunisation hand

Many people have difficulty remembering the schedule for childhood immunisation. This means that children often miss some or all of a series of immunisations that can protect them against polio, hepatitis B, diphtheria, tetanus, and other preventable diseases.

The schedule recommended by the World Health Organisation includes at least six different vaccines, which are given over the course of 5 visits, taking place at birth and then at 6 weeks, 10 weeks, 14 weeks, and nine months of age. Parents who can't read don't benefit from written reminder cards or health

cards issued at their child's birth. How can we help them remember when to take their infants to be immunised?

Song, mime, theatre and games are all good ways of sharing health information with people who cannot read. Trainers, teachers, and facilitators can use them to illustrate health messages, stimulate

Immunisation hand poem

*'I need five immunisation sessions against terrible childhood sicknesses.
Immediately at my birth, give me my first immunisation.
When I'm six weeks old, give me my second.
At two and a half months, give me my third immunisation.
At three and a half months, give me my fourth.
And then when I'm nine months old, give me my fifth immunisation.
Bravo! I have completed them all before my first birthday!'*

Use your hands

People can learn to remember messages using their bodies. In Benin, PROSAF staff (the Integrated Family Health Project) developed a learning activity called the 'Immunisation hand' which encourages people to use their fingers and a poem to remember the schedule.

Step 1 Discuss with participants the advantages of immunisation and the dangers of not using it to protect a baby against childhood illness.

Step 2 Ask participants to hold up their hand, separating the thumb and little finger while holding the three middle fingers together.

Step 3 Show how each finger can demonstrate an immunisation visit, and the vaccines which may be used*.

1 LITTLE FINGER	FIRST VISIT	AT BIRTH
2 RING FINGER	SECOND VISIT	AT 6 WEEKS
3 MIDDLE FINGER	THIRD VISIT	AT 10 WEEKS
4 INDEX FINGER	FOURTH VISIT	AT 14 WEEKS
5 THUMB	FIFTH VISIT	AT NINE MONTHS

Step 4 Ask several participants, and then everyone, to repeat the schedule using their hands to remind them.

Step 5 Explain that the three middle fingers are held together to represent three visits for the same immunisations. For them to be fully effective, the child needs to make three visits just a month apart. The bigger space between the thumb and the middle fingers represents the long wait until the child is nine months old for the fifth immunisation.

Step 6 Ask participants to use this exercise to teach their friends and family members.

discussion, teach participants new skills, and create simple memory aids.

The 'Use your hands' activity (see box) can be used in a workshop or during community education sessions. Trainers teach health workers, school children and parents to recite the poem and count off the necessary visits on a hand. To reinforce the message, a poster and radio item have been produced. The poem can be translated, adapted, and presented as a song, chant or rap. This is particularly effective if the words can be sung to the tune of a well-known local song.

This article was written by the PROSAF Communications Team. For more information contact Siri Wood, PATH, 1455 NW Leary Way Seattle, Washington 98107-5136, USA.

E-mail: swood@path.org

Published by: Tearfund, 100 Church Road, Teddington, TW11 8QE, UK

Editor: Dr Isabel Carter, PO Box 200, Bridgnorth, Shropshire, WV16 4WQ, UK

Tearfund staff spend considerable time dealing with many thousands of funding requests that we are unable to support. This is taking them away from their work of bringing good news to the poor through current partnerships. **Please note** that all funding proposals will be rejected unless they are from current Tearfund partners.

DPT (*diphtheria, whooping cough [pertussis] and tetanus*)

Polio

Hib (*haemophilus influenzae B*)

Hep B (*hepatitis B*)

BCG (*tuberculosis*)
Polio



* Countries may follow a slightly different schedule, depending on the national immunisation programme.