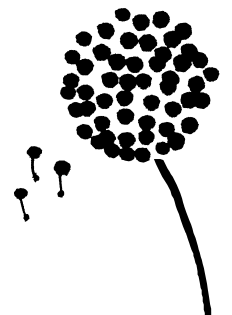


Footsteps

No.41 DECEMBER 1999

LOOKING AFTER OUR LAND



TEARFUND

FROM THE EDITOR

One small planet

The theme this time is how we care for the natural environment. Much of the issue is concerned with helping people to make the best use of a small area of land.

However, we all need to be very aware of the links between how we live and our wider environment. Farmers living in the foothills of the Himalayas in Nepal may be unaware that clearing their sloping land of trees contributes to flooding in the delta areas of Bangladesh. Wealthy people in the West, using high quantities of fuel to maintain their way of life, may ignore the evidence that this adds to global warming – which is likely to contribute to drought in Africa and flooding in central America.

If the Earth were only a metre in diameter, floating just above the ground somewhere, people would come from everywhere to marvel at it. People would walk around it, marvelling at its big pools of water, its little pools and the water flowing between the pools. People would marvel at the bumps on it and the holes in it. They would marvel at the very thin layer of gas surrounding it and the water suspended in the gas. The people would marvel at all the creatures walking around the surface of the ball, and at the creatures in the water. The people would declare it precious because it was the only one, and they would protect it so that it would not be hurt. The ball would be the greatest wonder known, and people would come to admire it, to be healed, to gain knowledge, to know beauty and to wonder at how this could be. People would love it and defend it with their lives because they would somehow know that their lives, their own wholeness and roundness could be nothing without it.

If the Earth were only a metre in diameter...

The world that God created was something of great beauty and wonder, but many parts of the world are now barren, unproductive or of little beauty. Each of us can influence in a small way

the area in which we live. We can encourage our neighbours to meet and discuss how to improve the environment where we live. Even in semi-arid areas or cities we can make a difference. There are plenty of ideas in this issue, but here is a personal challenge. Before the next issue of *Footsteps* arrives, plant and care for a few local tree seeds to mark the new millennium! With 35,000 copies of *Footsteps*, often shared by many readers, that makes a lot more trees in the world.

Text from Ideas and Action Bulletin No 176, FAO
Image: Mountain High Maps

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Isabel Carter

Footsteps

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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.

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Reforestation and resources

A VIEW FROM HAITI

by Heather Faulkner

Haiti is the western part of the Caribbean island shared with the Dominican Republic. Haiti means 'mountainous', but today Haiti's steep slopes are scarred by massive erosion. Years ago Haiti was covered in mature forest with trees including valuable timber species such as West Indian mahogany (*Swietenia mahagoni*) and Haitian Oak (*Catalpa longissima*). Today's Haitian population relies on wood for all sorts of uses but it is rarely produced in an organised fashion. Many of the rocky mountain slopes are stripped by goats of all but the toughest scrub vegetation.

A quick source of cash?

About 50 million trees are cut down every year, many for poles which are used (for example) to stake tomato plants. The planned planting and harvesting of forests is rare. The collection of tree seeds for planting is largely unknown. Less than 3 million trees are produced each year in tree nurseries. But everyone in Haiti uses

trees. To chop down a small tree and make charcoal is the usual way of obtaining some quick cash. Most of the population use charcoal and wood as fuel. Fruit, shade, timber and medicine come from trees. Where I worked, in the tree nursery established by the Baptist Haiti Mission south of Port-au-Prince,



Photo: Richard Hanson, Tearfund

the most common requests were for fruit trees such as avocado, mango and citrus, rather than for fuel trees to provide supplies for the future.

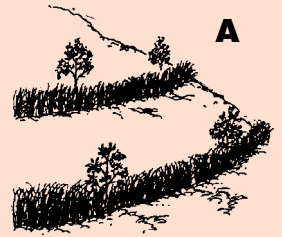
Planned harvesting

Trees are not seen as a crop. Once, an elderly man cutting young trees from a barren region to make charcoal was asked what he would do if he cut down the last tree. 'God will give us more,' he replied. A group of young people keen to plant a forest were asked how they would use it. They were horrified, saying the trees would not be used but just be there to look at. (However, in Haiti an armed guard might be needed to protect them!) Given the demands on Haiti's trees, any planting scheme needs to include planned harvesting to be realistic. There is a great variety of native and non-native species to fill every need. Some, such as the Hispaniolan pine (*Pinus occidentalis*), can grow on the most unlikely sites and give good quality timber. Others, such as *Leucaena leucocephala*, could be used to colonise eroded gullies and harvested for charcoal. On the other side of the island, in the Dominican Republic, vast areas of *Leucaena* woodlots are managed for this purpose. The tree does not need to be



Erosion control with vetiver grass

Barriers of vetiver grass are a very effective way of protecting against erosion. Vetiver is a tough grass which will survive drought, fires, pests and flooding. The young leaves make good animal food. It does not compete with food crops because the roots grow down, not sideways. It produces few seeds so does not spread and become a problem. If you plant rows of Vetiver grass along the contours it will stop erosion and help rainwater to soak into the soil (A).



Ask your extension agent where you can obtain vetiver grass locally. Split a clump into individual stems with attached roots. These are called slips (B). Cut the tops of each slip about 15–20cm above the base (C). Cut the roots 10cm below the base. Plant the slips in lines in small ditches (adding some manure or compost if possible) 10–15cm apart (D).



Information from Edwin Balbarino who has written a booklet about the use of vetiver in the Philippines (page 14).



grown in a nursery. It can be directly seeded into the ground in the rainy season.

Wally Turnbull of the Baptist Haiti Mission wonders how the Kenscoff Valley would look if he had not set up the mission's tree nursery. Trees are given out to farmers to plant around the edges of their vegetable plots. However, Wally wonders if the nursery's existence has meant that farmers use it as an excuse not to raise their own trees. Looking back, Wally is not sure if tree nurseries are the answer for Haiti because of the intensive work required to look after them. He believes the local farming method which gathers a team of workers together occasionally for a long, hard day's work might point to a more appropriate solution. Arranging intensive days when seeds (such as loquat, citrus, coffee, prunus, leucaena) could be directly sown into prepared sites might be a better way of meeting the huge need for reforestation. Cuttings, such as mulberry, could also be planted in such ways.

Willingness to take action

Although the will to plant trees in Haiti is small, at least it is there. With information and education about the consequences of deforestation and erosion, the desire to plant trees will grow. Now and again you meet an enthusiast – someone with the ability to see beyond any number of problems, whether practical or in motivating others. Someone who has what they call *volonté* – will. Such *volonté* can make light work of any number of problems. In the words of Pastor Frantz Clotaire, a man with much *volonté* who runs an agriculture school in southern Haiti, '*Developman – se moun li ye*' – 'Development is people.' It is for people and it can only be done by people, each playing their part and each with *volonté* and dreams to make their world a better place.

Heather Faulkner spent a year working in the tree nursery of the Baptist Haiti Mission with Tearfund.

The Yatta Guides of Kenya

by Dan Schellenberg with Simon Batchelor

The Kamba people, the third largest tribe in Kenya, have a fairly typical rural African lifestyle. Their land is mostly semi-arid scrub brush dotted with smallholdings or *shambas*. The wife and children generally live on the *shamba* while the husband goes to the city. In the 1980s they grew maize, cotton and a few vegetables. These crops could fail as often as one season in two. Could the average family improve yields by changing the management of their scarce resources? This was the question that faced a small development project in Yatta.

The first step was to discuss local concerns among seven families (helped by an outsider, known as a *guide*). Their most immediate need was to store water for the dry season. Women spent half their time fetching firewood and water. But tackling the need for water would require money, and none of the families had spare money. There was no credit available and the families lived too far apart to be able to co-operate on a single project.

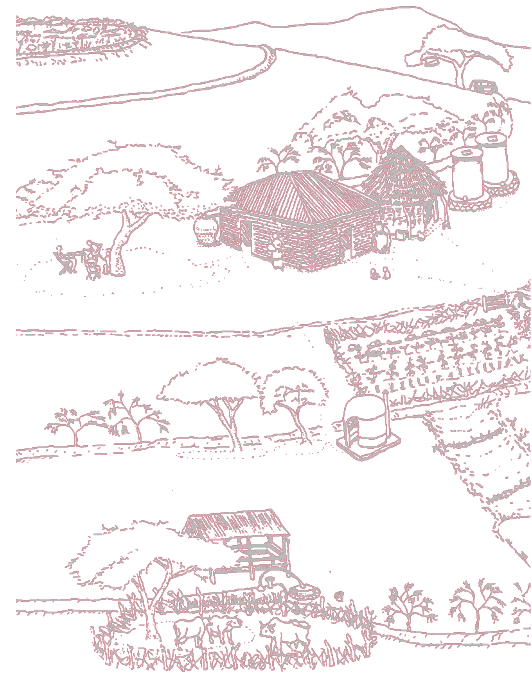
Finding the funds

However, each family did have two oxen, (or donkeys or cows) which were yoked together for ploughing with their traditional harness. Recently an improved harness had been developed at

The word *guide* is used for people sent out to find the way for the village; such as the way to information, a grazing area or water in times of drought. It refers to those who are gifted at seeing the way forward. These people have no official status, are humble and respected for their willingness to put effort into finding answers to problems.

Nairobi University which could be used by a single animal. The harness cost a relatively small amount which the families could raise. After a trial period, the families using the harness proved that one ox was sufficient to work the land. A major benefit of the harness was that the weakest animal could be sold for enough money to buy cement and wire – enough to build a 20,000 gallon rain catchment tank. The tank was simply a hole in the ground with a ferro-cement lining. The tank supplied a family's water for six months without rain with some extra to sell to neighbours.

Water from the tank was very muddy and carried the risk of disease. An upward flow filter made from sand and charcoal (see *Footsteps 35*) was used to purify drinking water. As this needed a single bag of cement to build, it could be



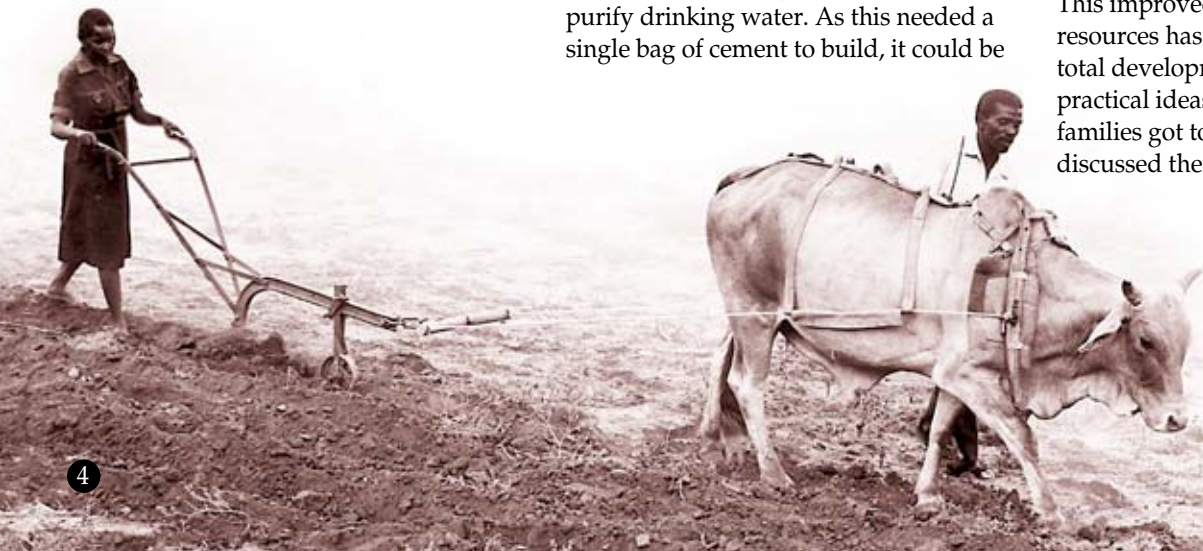
made at the same time as the lining of the catchment tank.

Choosing trees

Building the tank provided a practical introduction to the principles of land management and, in particular, erosion control. Trees had to be planted to prevent the water washing away topsoil as it ran into the tank. This sort of agro-forestry planting contrasts sharply with the traditional practice of planting annual crops on bare soil, where the soil is easily eroded by rain. A leguminous fuel and forage tree, *Leucaena leucocephala*, was introduced. A second tree, *Moringa oleifera*, which also bears protein-rich beans, was introduced (*Footsteps 20* and *28*). The crushed seeds of this tree were used to clear the water before using the filter. Now the seven households had achieved a marked improvement in their lifestyle with a potential for extra income.

This improved use of their existing resources has to be seen in the light of the total development process. These practical ideas arose when just a few families got together with a guide and discussed their problems. After making

Photo: Dan Schellenberg

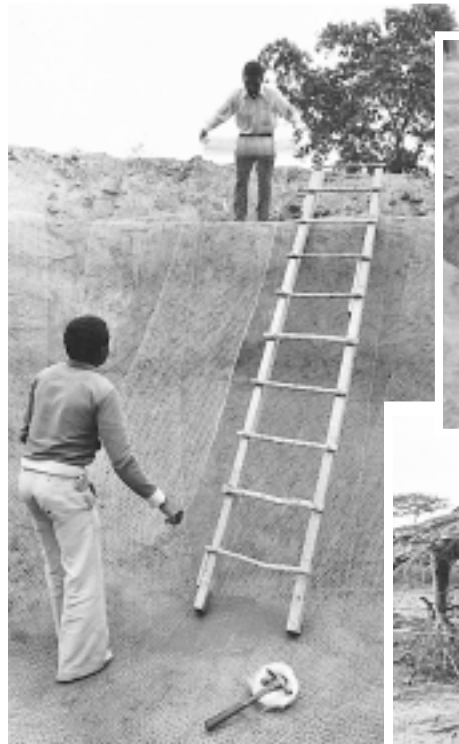




these improvements the novelty of their new income distracted some from making further improvements to their resource management. They bought radios, watches and other luxury goods. The radios provided a source of outside information. This period of adjustment allowed their neighbours to see the benefits of the improvements supported by surplus water from the tank. People also began experimenting with market gardening using the water from the catchment tank. With some planning, and the sale of these vegetables to neighbours in the dry season, people found that income from the water could be doubled.

Change for the better

The new skills of building with concrete helped some people start businesses and become craftsmen. The technology used in lining the water catchment tank was used to build simple concrete bins for storing grain. On average, over half of the harvested crop was lost after harvest through poor storage. Concrete bins protected it from rats and insects. However, grain stored this way had to be well dried, so a simple solar grain dryer was introduced. The dry grain required longer cooking time. Having introduced firewood management at the same time as tree planting for erosion control, they found that an efficient stove made better use of fuel. Later on they introduced biogas production, a technique which uses cow dung to produce light, fuel and



Improving the water supply.

Above: making the ferrocement lining to the new rain catchment tank.



Children using a small hand pump in front of a small water tank covered to slow evaporation and keep out livestock and children.



Photos: Dan Schellenberg

fertiliser. Many of their neighbours copied the various improvements.

However, resources are not just physical. These families also began to manage their social resources. They sat and talked with their neighbours about problems and how to find solutions. They, in turn, started acting as guides. When a problem was identified, one of the group – usually the guide – went to the nearby city to try to find new ideas and information on how to solve that problem. Information proved to be the most critical resource. Their problem had often been solved already. They just had to find out where and make adaptations to the local situation.

Act of generosity

Finally they found that they had to manage their spiritual resources too. The rain catchment was copied by many neighbours. However, few copied the grain store. When asked why, the neighbours couldn't decide if it was good or evil. The catchment tank obviously had God's blessing as he filled it with life-giving water. But the store had yet to show good or bad omens, so people were prepared to wait several years before

trusting them. The breakthrough came after a two year drought when all the Christian guides opened up their stores of seed (worth a fortune) and gave their neighbours enough to plant for the coming rains. This simple act of generosity opened the way for more than 20 grain stores to be built by neighbours in the next two months.

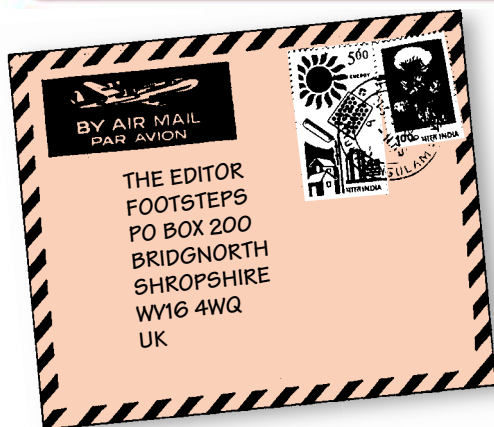
Stones still continue to be turned into bread in Yatta.

Dan Schellenberg was an associate of SIFAT, USA but is now a self-employed consultant in sustainable community development. His address is Rt #1 Box 163, Kennard, Texas 75847, USA.



Using the new energy-efficient stove.

Photo: Dan Schellenberg



The aged and AIDS in Africa

As everyone knows, parts of Africa have the highest rate of HIV/AIDS infection in the world. Most of those affected are young people aged between 15 and 35 years. Less than 5% of people over 50 years of age are HIV-positive. So the increasing number of orphans is being taken care of by these 'older people'. In Africa most older people no longer have a paid job and pensions are almost non-existent. So our elderly people now need great help in order for them to cope not only with the death of their children but the survival of their grandchildren.

We are starting a community-based project that aims to help elderly people living with orphaned children to cope – to help send them to school, to provide for their health needs and, most importantly, to help provide food. We would like to contact other organisations that can share advice and resources with us.

*Mr N Malangu
PO Box 10205
Newcastle 2940
South Africa*

Footsteps at the centre

Members of Communauté des Exploitants Agricoles in Cameroon use each issue of Footsteps as the centre of their discussions. Their aim is to promote sustainable agriculture. Each year they organise a farmers' week to share information and include a Pas à Pas information table.



Support for older people

We are a group of six like-minded people who are raising money to help older people in Nepal. Our society is dominated by 'Hinduism'. In the Hindu religion elders were highly valued. This belief is slowly changing and being replaced, eroded by the selfish individualism common in the West. Hence our society is in transition from one where elders were respected to one where they are sometimes ignored.

Therefore we hope to do something for older people to improve their lives and bring joy. We plan to develop a model village where older people can be happy. We are carrying out advocacy work on legal issues which affect older people (such as the Government's responsibilities) and we educate children on their duties to care for older people.

*Shridhar Lamichhane
NSCFP/SDC
Jawalakhel
Kathmandu
Nepal*

E-mail: slnscfp@wlink.com.np

Mushrooms

Last year I wrote about how a friend got a fine crop of mushrooms by chance through using rice husks as a soil conditioner. We have a tree nursery with 3,000 budded orange trees for sale or distribution. We have been using rice husks as a mulch in the dry season. I suppose some of this has got dug into the soil. For several weeks now mushrooms have started appearing. Our workers and

others come to collect the mushrooms. If our nursery was enclosed to keep out people and goats presumably our harvest would be much higher. Please don't ask for more information – just use rice husks in your garden and see what happens!

But remember that some mushrooms are poisonous. Always check with local people to make sure they are safe before you try them.

*Father Vincent O'Brien
St Justin's Seminary, Ogbia
PO Box 13
Otukpa
Benue State
Nigeria*



Agriculture – the key

Many people in the Third World forget that agriculture is the basis of our life. Today many people regard being a farmer – and especially being a young farmer – as being poor. Work in the fields is often considered a job for people unable to find other work. However, everyone needs the work of the farmer since people always need to eat and our factories need agricultural produce.

We must realise that we can never obtain the same level of development that the industrialised countries have simply by copying them, but rather we can do it through a creative spirit. Only then can we obtain the finance we need from within our own countries. The Third World must change its development policy, by keeping in mind the people who are at the grass roots. They are the source of development.

Most Third World farmers have a little land to cultivate – even if it is just unused land in our towns. With the hoe and the machete, our waste land can become good farming areas. If everybody supported agriculture and agricultural credit were made available to farmers, maybe we could resolve the problem of hunger and poverty in our countries.

*Mambuene Mbunga
ASPROVA
BP 29
Mbanza-Ngungu, Bas-Congo
Democratic Republic of Congo*

Mucua juice

We prepare and sell a food product called 'mucua juice' which is made from the fruit of the baobab tree, commonly known as 'imbondeiro' here. (Its scientific name is *Adansonia digitata*). This fruit is rich in vitamins and minerals.

To prepare the juice you will need two large metal containers, two buckets and a sieve.

- Collect 10kg of mucua fruit and peel it.
- Boil 20–25 litres of water and mix in the peeled mucua. Mix well until only seeds can be seen.
- Separate the juice from the seeds using a fine sieve.
- Add 3kg of sugar and stir well.

For packaging, we buy thin sheets of transparent plastic which we fold in the middle and then melt together at the sides to form a bag. Each bag holds 55cc. The work of packaging is very tiring – we need to light two paraffin-fired lanterns every day and the fumes are very unpleasant. It takes four hours to make 300 bags, which we then fill with the cooled juice.

Each day we take 300 bags of juice to be frozen. A day later, when well frozen, they are placed in a cold box and sold in the market. This frozen mucua juice can be found in markets all over Angola and people like to drink it at the hottest time of the day. Once unfrozen, it does not keep more than 24 hours and the taste changes as it does not contain any preservatives. Through *Passo a Passo* we learned to use potassium metabisulphite as a preservative. However, this is very rare in our pharmacies.

Soares L Kalenda
s/c Moreira Sevani Paulo
C Postal No 2614
Luanda
Angola



'Mucua juice! Get your mucua juice here!'

Investing in the poor

AGAPE began in 1975 with the objective of promoting development and the growth of micro-enterprise. Their vision is to serve as promoters of holistic development for individuals, their communities and their environment, on the basis of Christian principles. They help the poor to build up ways of earning an honest living. They offer three types of credit for micro-enterprise:

- individual credit
- credit for what they call solidarity groups which involve 4–6 people
- banks of trust which provide credit for 20–40 people, especially women.

They also offer training in accounts and trading.

AGAPE (Asociación General para Asesorar Pequeñas Empresas)
Carrera 46, No 53-34 Piso 2 Of 3
Barranquilla
Colombia
Fax: 3415220
E-mail: agape@col3.telecom.com.co

Request for biogas information

In the community where I work as an agricultural volunteer, people are keeping pigs as a source of income to send their children to school, for medical fees and as a source of protein. We would like to reduce the burden of collecting firewood for the women here, who commonly walk about 30km a day collecting fuel. Instead we would like to install biogas plants in the community to provide fuel and also to provide fertiliser for vegetable growing. We would be very grateful if anyone can help us with more information.

Andrea Buarua
Fort Hare's Flori Organic Gardens
PO Box 450114
Mpika, MPK450 FH114
Zambia

Effects of tobacco smoke

Most farmers here in Western Kenya cure their tobacco in smokers made of mud and thatch which are often built next to their homes since the fires need to be maintained for 24 hours. However few realise the danger of the fumes for their families and especially pregnant women

living nearby. These toxic fumes can cause cancer or miscarriage. Those who feed the fires are exposed to very high amounts of fumes. Does anyone know of a safer way of constructing these curing houses so as to reduce the dangers to those living nearby?

M Kivanda
Oyani Christian Rural Services
PO Box 771, Suna
Kenya

EDITOR:

Smoking cigarettes is even more dangerous and will kill one in every four smokers.

Questioning the G7 decision

Millions of poor people were waiting most patiently for the G7's decision in June 1999 on cancelling debt. But the news did not reassure anyone: the debt will be reduced by 65 thousand million dollars! Everyone wants to know why the debt has not been cancelled completely. Poor people are suffering enormously trying to pay back debts incurred a long time ago. And meanwhile people are dying of hunger, diseases, and families are being torn apart.

Can the G7 leaders not change their decision? We listened to their decision with dismay. We must form a united front with the supporters of Jubilee 2000 asking for a total cancellation of the Third World debt. Everywhere the debt is crushing men, women and children who on the whole do not know anything about it. Africans, Asians and Latin-Americans are all people created in the image of God, just like North-Americans and Europeans. While some people live in desperate poverty, others live in peace in unashamed luxury... What a sad situation! When will this change?

Mr Ewan Denis
BP 559, Nkongsamba
Cameroun



Church of England bishops campaigning for Jubilee 2000 at their 1998 Lambeth Conference.

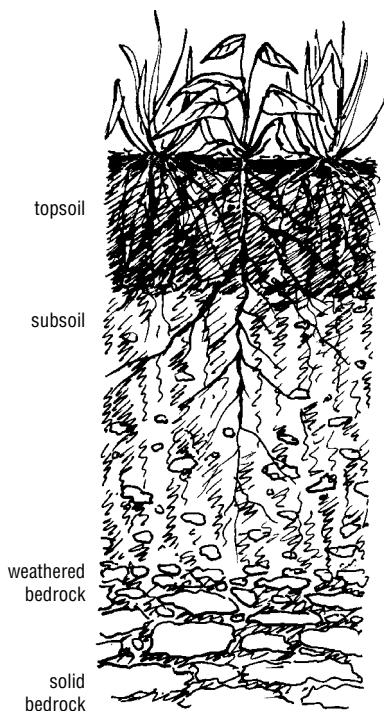
Issues affecting our natural resources

With thanks to Gillian Dorfman for this information compiled from Outreach packs 101, 102, 103. Produced by Outreach, 200 East Building 239 Greene St, New York University, NY 10003, USA and Outreach Regional Office, UNEP, PO Box 30552, Nairobi, Kenya.

Just as the world's population and poverty are increasing, so also is the destruction of our precious natural resources. There are many factors which link together and result in land becoming less productive.

Soil takes thousands of years to form but it can be destroyed extremely fast by careless or inappropriate activities of people.

Bad land use practices cause the loss of topsoil which triggers a chain reaction of events, not just in the region immediately affected by the soil erosion.



Soil layers

Soil has several layers. However, it is the thin top layer, the topsoil, which is the fertile part where crop and tree roots obtain nutrients. Erosion removes the topsoil, leaving the hard, infertile subsoil, which is of little use for growing crops.

You can see these layers when foundations are dug for a building or when a new road is built going through a hillside.

Soil erosion

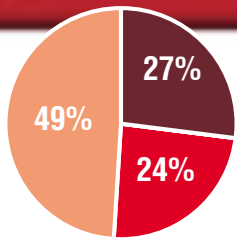
This happens when soil cover is removed, exposing the soil to the effects of wind and rain.

During heavy rain soil is washed away into rivers, lakes and seas. Not only is it lost to the farmer, but it also silts up water sources and coast lines, affecting fish production.

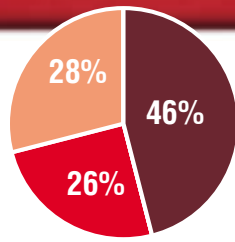


Overgrazing

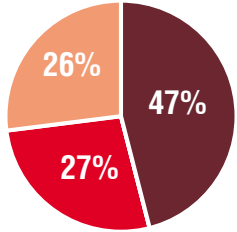
This happens when too many animals graze on the same area of land. Unless controlled, grazing animals will eat grass and other plants down to the roots, leaving the soil exposed to erosion. Plants which are good for animals to eat and are effective at holding the soil together, may disappear and be replaced by plants which are of little use either for grazing or to protect the soil.



Africa



South America



Asia

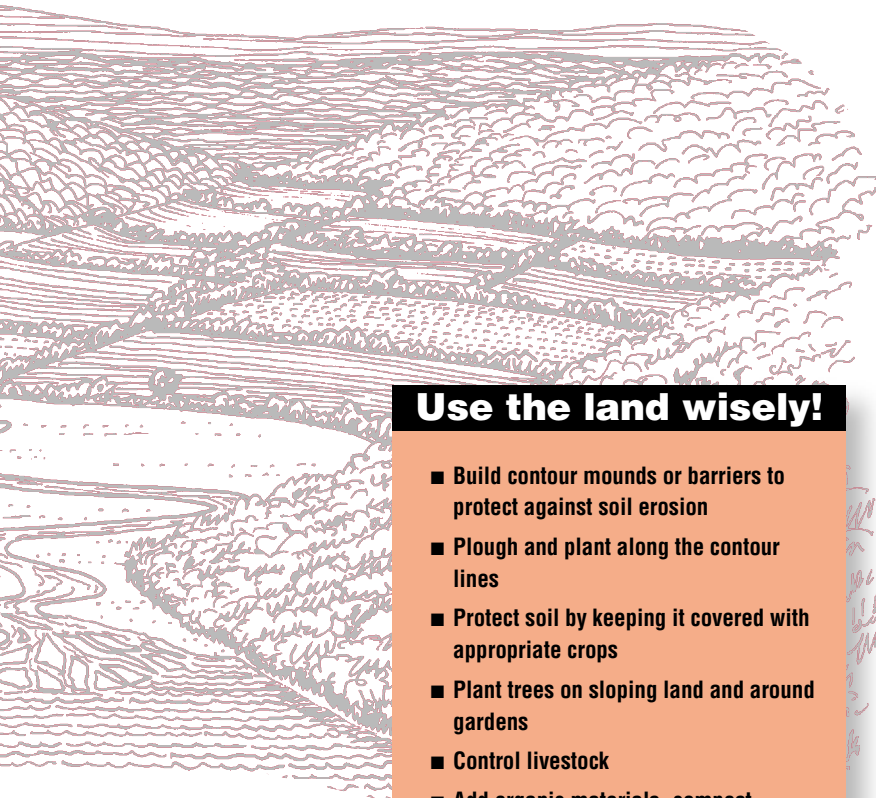
How soil is lost

- Overgrazing
- Agricultural activities
- Deforestation



Deforestation

Trees protect the soil from erosion. When they are cut down, the productive soils in which they grew can be quickly washed away.



Use the land wisely!

- Build contour mounds or barriers to protect against soil erosion
- Plough and plant along the contour lines
- Protect soil by keeping it covered with appropriate crops
- Plant trees on sloping land and around gardens
- Control livestock
- Add organic materials, compost, manure, crop residues to the soil



Logging

All around the world logging companies, landowners and governments are clearing forests to earn money from the timber. Sometimes the land is replanted with trees, but often this is not done. The world's forests are disappearing 30 times faster than they are being re-planted.



Flooding

If forests and vegetation cover are removed, when heavy rains come the rain no longer soaks into the soil but runs off down hillsides. Rivers overflow and flood towns and cities downstream.



The tree gardens of the Chagga



by Simon Batchelor

The 'tree gardens' of the Chagga people of Mount Kilimanjaro provide an inspiring model of how land can be sustainably managed.

How plants and trees make use of available space

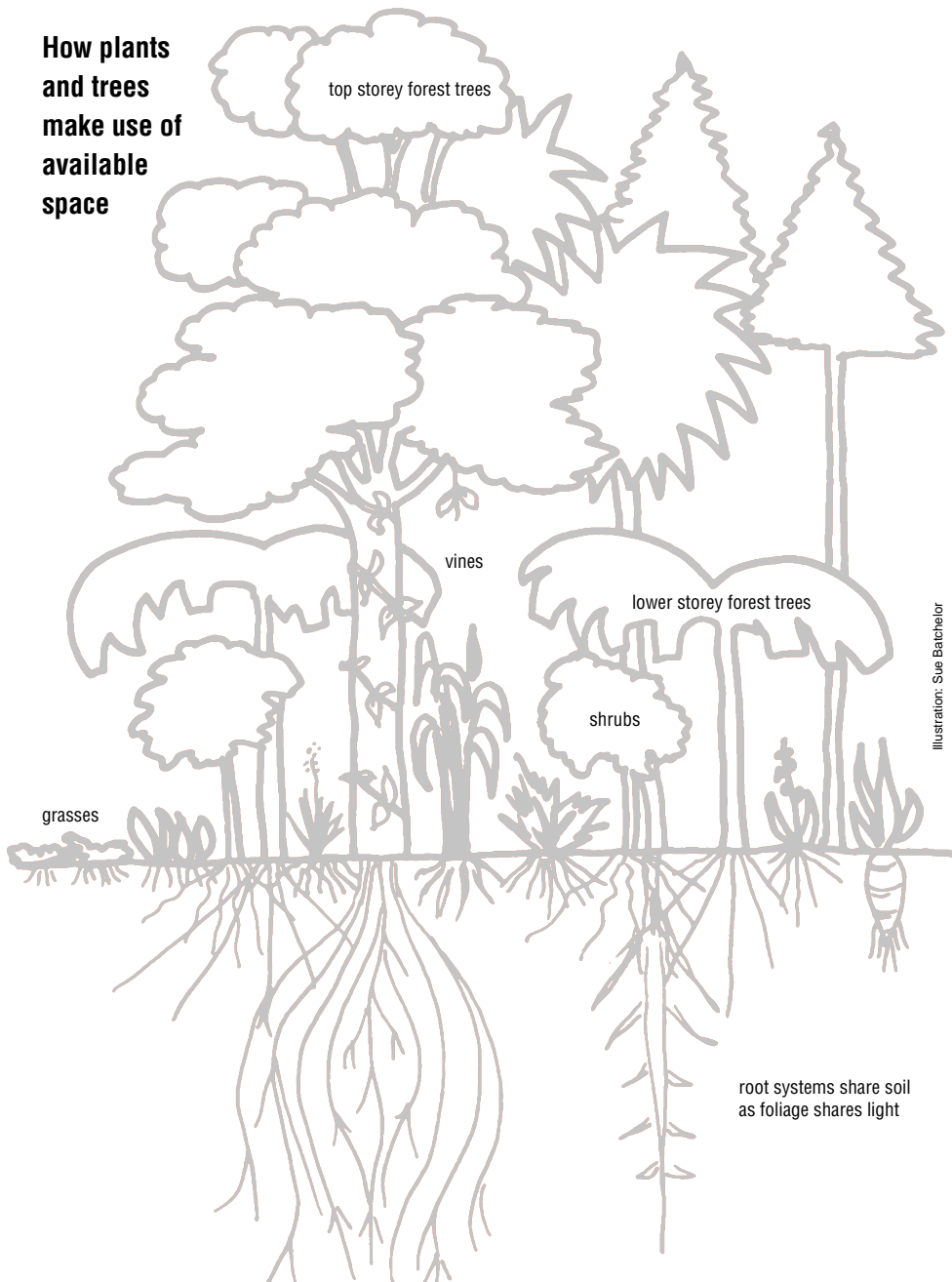


Illustration: Sue Batchelor

The Chagga are a mix of ethnic groups who live on the slopes of an impressive mountain, Kilimanjaro, in Tanzania. As various ethnic groups settled in the area they brought their own crops with them – including maize, cassava and sweet potatoes. Their rich mix of many plants slowly developed into a distinctive form of land use. This uses land not just in terms of spacing at ground level, but also takes into account the differing heights of plants. They use trees to create multiple levels of growth.

The forest as a model

They took their inspiration from the natural forest. They saw that the forest made maximum use of its resources of land, water, and light and so they started farming small parts of the forest land where useful species of plants could be found. Gradually they replaced other parts of the natural forest with cultivated plants. The Chagga have become expert at combining many types of plants which not only require different amounts of light but also have roots of varying depths. For example, yams tolerate the shade of neighbouring trees and use their trunks as climbing supports. Trees with deep root systems allow crop plants to be grown right next to the tree and still obtain sufficient nutrients. Today, a typical Chagga farmer grows up to 60 different species of trees – and often many different varieties – on an area the size of a football field. Recycling nutrients is vital and cattle manure is used to fertilise crops.

The different zones

The lowest zone (up to 1m high) includes taro, beans and fodder grasses. The next zone (1–2.5m) consists mainly of coffee with the banana canopy (2.5–5m) above it. Above the banana layer are many valuable timber trees. The average small plot will produce 125kg beans, 280kg coffee, and 275 bunches of bananas each year and supply fodder for livestock. Their system of farming has remained sustainable for over 100 years, mainly because they keep continuous ground cover and return nutrients to the land. The Chagga's use of natural resources continues to impress visitors. Long before there were development projects in the area, the Chagga tapped water in steep, remote gorges, digging canals and

hollowing out tree trunks to carry it to their homes on mountain ridges. They use this for drinking, livestock and irrigating the nurseries.

There are many aspects of Chagga life which set a good example for development projects. From one packet of coffee seeds in 1885 the Chagga now have over one million coffee bushes in their smallholdings. The rapidly changing prices of coffee on the world market taught the Chagga not to concentrate just on coffee as a source of income. This is why bananas and other food crops never disappear from tree gardens even when coffee prices are high.

Of course, Chagga life is not perfect. The one resource they do not use so wisely is people power. The burden of most of the work stills falls mainly on the women.

However, women on Kilimanjaro need only just over two hours per week to gather enough fuelwood for their families – much less than in other parts of Tanzania. This is because fuel wood is included in the many different products grown in the smallholding. One hectare is usually sufficient to supply a large family with fuelwood and timber.

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The Chagga took their lessons from the forest, which makes maximum use of its resources of land, water, and light.



Photo: Corel

Farming in arid conditions

Imagine vast areas of land with no trees and plants – just dust and cracked earth. When land which used to produce crops loses most of its fertility and becomes barren, the land becomes desert. For over 900 million people around the world this is a huge problem. It causes food and water shortages and forces people to leave their home areas.

People help to extend deserts by their actions – by cutting down or burning trees, by overgrazing with animals, by over-cultivating and not replacing plant nutrients and by using water incorrectly, through poor drainage, building up salt deposits which ruin the soil and kill most crops.

There are many things that can be done to stop desert areas from spreading. These include farming along the contours – not up and down slopes; adding lots of organic materials such as crop wastes, manure and compost; planting trees and avoiding ploughing if possible.

Using strips of vetiver grass is another very effective way of protecting against erosion (see page 3).

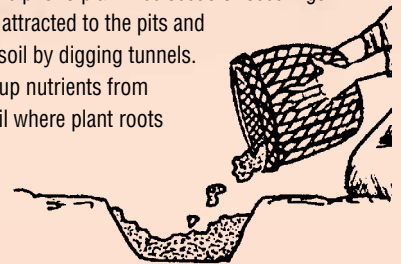
Information from the Developing Countries Farm Radio Network
366 Adelaide Street, West Suite 706, Toronto, Ontario M5V 1R9,
Canada. Fax: (416) 971 5299 E-mail: dcfrn@web.net.

Planting in pits

In parts of West Africa, farmers make barren soil productive by planting their grain seeds in small pits. Dig a pit in the soil about 15–20cm deep and 25cm in diameter. Dig one of these pits every 80cm throughout the field. Put some manure, compost or crop wastes in each pit. When the rains come plant 4–6 seeds (sorghum, millet, maize etc) in each pit. You could also use the pits to plant tree seeds or seedlings.

Termites will be attracted to the pits and help loosen the soil by digging tunnels.

They also bring up nutrients from deeper in the soil where plant roots cannot reach.



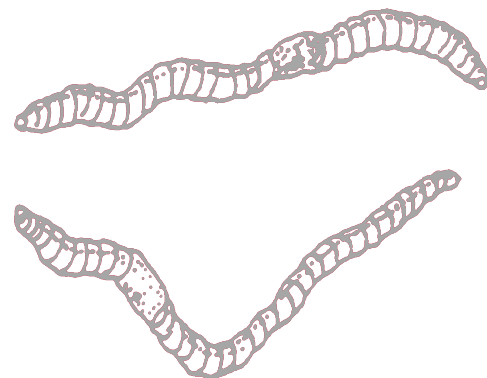
Half-moon trenches

Dig half moon ditches on gentle slopes to protect against erosion and keep water in the soil. Once the ditches are established, plant crops or trees in them. They will collect good top soil, crop wastes and water and over several years will develop rich soil.

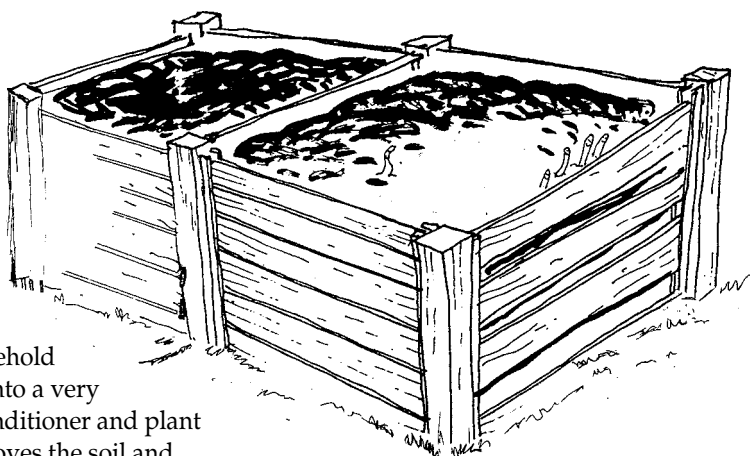


Photo: Richard Hanson, Tearfund

OUR FRIENDS THE Worms



Worms live in the top layer of the soil. They are small creatures, often unnoticed and yet they are very valuable to farmers. They eat plant and animal leftovers, turning them into useful nutrients for plants. With their burrows they allow more air into the soil and improve drainage. Soils with plenty of worms will be fertile.



The process of using earthworms to turn organic matter into compost is called vermi-composting.

They can turn household and garden waste into a very high quality soil conditioner and plant fertiliser. This improves the soil and increases small-scale vegetable production. Vermicompost has no smell, is pleasant to handle and can be added directly to plants, used in seedbeds or placed in the bottom of seed drills. It can be produced by growing worms in special containers known as bins.

Making a worm bin

The worm bin may be made of wood, concrete, wire covered with plastic sheeting, metal, plastic or earthenware. It should be about 1.5m square and about 30–40cm deep, as composting worms

tend to feed upwards, nibbling from material just below the surface. The larger the surface area, the more opportunity for worms to feed. The bin should either have no base or, if metal or plastic containers are used, a few drainage holes should be added. A 200 litre oil drum split lengthways (and washed carefully) makes two good containers. Fill the worm bin just as you would for making compost – layers of chopped vegetable and plant waste, and layers of manure and soil in between. Water the compost and cover it with a piece of black plastic, cardboard or bamboo matting. Always keep it damp and covered as worms will only grow in moist, dark conditions. After 1–2 weeks (when the initial heat from the compost has cooled) make holes and add either worms or eggs. There are over 4,000 species of worms, and only a few (small and bright red) are specialised for vermicomposting. It is worth contacting the local agricultural extension or advisory services to see if you can obtain recommended species (such as *Eudrilus euginea* and *Eisenia foetida*). You will need about 50 to 100 worms to begin each composting box. If you cannot find any suppliers of composting worms, try using worms used for fishing bait or ordinary garden worms.

Help yourself by helping others

A farmer who won prizes every year for his maize was interviewed by a newspaper reporter who discovered the farmer shared his seed maize with his neighbours. 'Why do you share your best seed maize with your neighbors when their maize competes with yours each year?' the reporter asked.

'Why sir,' said the farmer, 'didn't you know? The wind picks up pollen from the ripening maize and swirls it from field to field. If my neighbours grow poor maize, cross-pollination will reduce the quality of my maize. If I am to grow good maize, I must help my neighbors grow good maize.'

This farmer is very aware of how all life is connected. His maize cannot improve unless his neighbour's maize also improves. So it is in many other ways. Those who choose to be at peace must help their neighbours to be at peace. Those who choose to live well must help others to live well, for the value of a life is measured by the lives it touches.

From Sid Kahn, based on an extract from a book by James Bender

Creating compost

Composting worms will eat all types of kitchen vegetable waste. Grass and weeds should be allowed to dry out a bit to prevent the compost heating up too much. The waste can be added around the edges of the bin, using a different place each day in turn. It can be dug in a little to prevent flies or just left on the surface. After 2–3 months the vegetable waste will have turned into fine, very fertile compost and the worms will have

multiplied rapidly. To harvest the vermi-compost, push it to one side and stop watering it. Add old manure to the other side and keep it moist. The worms will move into the manure so you can harvest the vermi-compost. Then continue adding vegetable waste to the bin as before to produce more compost.

In business with the worm

During the 1980s Cuba had to find alternatives to imports of inorganic fertilisers. Cuba's vermi-composting programme began in 1986 with two small boxes of red worms. Less than ten years later there were 172 vermi-composting centres in Cuba, producing over 99,000 tons of vermi-compost each year. One farmer in Ecuador, Enzo Bollo, has made the production of compost from worms into a huge business employing 14 full-time workers and producing 20,000 sacks (33kg each) of valuable compost each year which is sold commercially.

Vermi-composting on a large scale at Enzo Bollo's worm farm in Ecuador.



Photo: Isabel Carter, Tearfund

Information provided by Sam Ross and CEDEPO, who have produced a cartoon booklet on worm farming. Their address is CEDEPO, CC 109, (1878), Quilmes, Provincia Buenos Aires, Argentina.

*Tel/Fax: (01)26 28 12
E-mail: cedepo@geocities.com
or samross@iafrica.com.*

Suppliers of worms

Hennie Eksteen, at Affmech, PO Box 300, Cato Ridge 3680, South Africa

Meyer, at 18 Smit Street, Potchestrom, South Africa

BIBLE STUDY

Placing God first

by M Abdou Yaba Diop

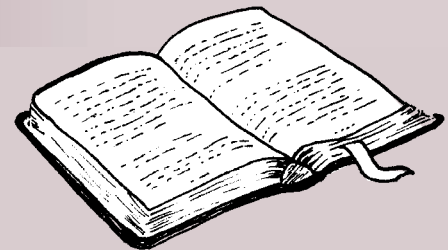
For our work in development to be successful, we need to place God first in every-thing we do. However, material things often take first place in our lives in such a way that sometimes these become our god. Instead, make the book of Proverbs the standard for your action. It suggests numerous principles which may help our work for God to prosper.

Read Proverbs 3:1-10

We need to trust in God with all our hearts and souls and not in man or our own abilities. In facing all of life's circumstances, we must continue to believe, to pray and to put into practice the Word of God. Then he will keep us in good health and help us to prosper.

Read Proverbs 4:7-9

Our effectiveness in the work we do is determined by our wisdom – in other words, how we apply the knowledge we have. Wisdom means putting into practice all the theories and rules we have learnt. Wisdom shapes our success and achievements in both home and work – it is the key to total success. Wisdom does not mean the knowledge of modern science, geography or history. Wisdom and applied knowledge start with God. Wisdom will provide for your needs, bring you happiness and assure you a crown of glory in heaven.



Read Proverbs 9:10-12

Wisdom is first of all about respecting and fearing God. For many people, their work comes first. But the effectiveness of our work depends on the priority that a development worker gives to God, who gives all-important wisdom. Wisdom that comes from God prolongs life, brings rewards and assures good health. It enables a person to grow and to achieve good results.

Read Proverbs 29:25

Why trust only in men rather than God? Putting our trust in men may be a snare for development workers. These verses should be our mark at all times.

Read Proverbs 16:3 and 9

These two verses tell us how to give God first place. He will show us the way to follow for achievement and success, even in the smallest details.

Our work is in vain if God is not at the head of all our projects and if we do not place him at the centre of our work. It is pointless to rise early and to work as late as possible unless we do it for God (Psalm 127:1-2).

M Abdou Yaba Diop of Senegal is a faithful reader of Pas à Pas and uses each issue to draw out lessons to use in his work. His address is BP 50, Khombole, Senegal.

Books Newsletters Training materials

How to Grow a Balanced Diet:

A handbook

for community workers

by A Burgess, G Maina, P and S Harris

This is a practical handbook which bridges the gap between nutritional problems and agricultural solutions. It provides information about nutritional education and balanced diets. It explains the basic techniques of organic agriculture and includes details about producing and storing over 40 food crops and vegetables. It is designed to be used both as a training manual and as a self-study guide. With over 240 pages, it is well illustrated and easy to use. It costs £16 including airmail postage.

There are discounts for large orders or for surface postage.

Contact:

VSO Books
317 Putney Bridge Rd,
London,
SW15 2PN,
UK

Fax: +44 20 8780 7300

E-mail: sbernau@vso.org.uk



Trabajemos en Equipo:

Manual para miembros de una Junta Directiva

by Mauricio Solís

This is a self-help manual that is written for leaders of Christian organisations. It provides practical tools to help in team building, efficient decision making and encouraging motivation and commitment within the organisation. It has 117 pages and costs US \$8 including postage. It is available only in Spanish from:

IINDEF

Apdo 168-2350

San Francisco de Dos Ríos

San José

Costa Rica

E-mail: iindefcr@sol.racsca.co.cr

Ética Crista na Saúde

(Christian ethics in health)

by Dr Jorge Cruz

This is a useful book looking at issues of concern to Christians in health. It provides a Christian viewpoint on issues such as abortion, euthanasia, homosexuality, suicide and alternative medicines. It is available only in Portuguese and costs 1.5 Euros or 300 Escudos. Available from:

GBU, Rua Rabelo da Silva, 45-10,
1000 Lisboa,
Portugal

Tel/Fax: 01-3578036

E-mail: gbu@mail.telepac.pt

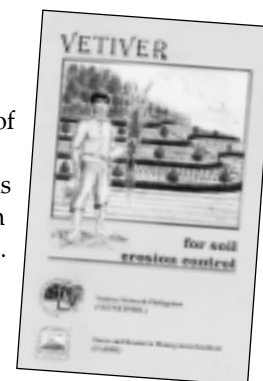
Vetiver for Soil Erosion Control

by E Balbarino and R Gravoso

A helpful and well illustrated booklet describing the advantages and uses of vetiver grass in the Philippines. It contains farmers' comments on their own experiences. Available free of charge from:

ViSCA, Baybay, Leyte,
Philippines

E-mail: vnp-ed@mozcom.com



IIRR resources

The International Institute of Rural Reconstruction (IIRR) has developed a fast and efficient way to produce information materials through participatory workshops. These workshops bring together scientists, NGO staff, extension workers and local people, together with editors and artists to produce manuals or kits made up of loose-leaf sheets or booklets. So far, IIRR has produced information kits and manuals on 20 different topics, including agriculture, agroforestry, women and development, health and aquaculture. The publications are interesting and easy to use. Here is a selection of their recent titles. Contact IIRR for further information.

Resource Management in Rainfed Drylands US \$20

Backyard Eel Culture US \$10

Farmer to Farmer Extension: Lessons from the Field US \$15

Participatory Action Research and Social Change US \$30

Creative Training: A User's Guide US \$5

– a kit to help trainers think more creatively in adapting tools to suit their needs.

Farmer's Changing the Face of Technology: Choices and Adaptations of Technology Options US \$15

Details from: Publications Unit, YC James Yen Center, Silang, Cavite 4118, Philippines

Fax: 63-46-414 2420

E-mail: pub-iirr@cav.pworld.net.ph

Sustainable Livelihood Options for the Philippines

– an information kit with three booklets: upland, coastal and urban lowland. Available only at: DENR, National Capital Region, Aaron Building II, Araneta Avenue, Quezon City, Philippines

Small-scale Freshwater Aquaculture in Bangladesh

Available in Bengali, cost Taka 375 (US \$15).

Available only from: Bangladesh RRA, Dhaka-1207, Bangladesh

SPANISH KITS

Guía Práctica para su Huerto Familiar Orgánico

(The bio-intensive approach to small-scale household food production) US \$20

Sondeo Rural Participativo

(Participatory Rural Appraisal) US \$25

Experiencias Sobre Cultivos de Cobertura y Abonos Verdes

(Experiences with Cover Crops and Green Manures)

These are only available from: IIRR, Ap Postal 17-08-8494, Quito, Ecuador

Fax: 593-2-443 763, E-mail: daniel@iirr.ecuanex.net.ec



Vétérinaires Sans Frontières

This is a group who provide support and training to help people fight poverty and malnutrition wherever animals are an essential factor in their development. They work with community volunteers (promoters) training them in animal husbandry, breeding and animal health. Some of their excellent materials are available free of charge. Write to:

*Vétérinaires Sans Frontières, 14 avenue Berthelot, F-69361 Lyon, Cedex 07, France.
Fax: +33 4 78 69 79 56 E-mail: vsf@globenet.org Website: www.vsf-france.org*



Guide pratique d'élevage d'aulacodes au Gabon

by Ferran Jori and Jean-Marie Noel

This is a practical guide to raising and breeding grasscutters or giant cane rats. These animals are a popular source of meat in West Africa. This 64 page booklet with plenty of drawings provides clear and simple information for raising these animals in rural or semi-urban areas. It is available free of charge but only in French. A very useful resource.

Formation de promoteurs d'élevage

by Jérôme Thonnat

This 76 page booklet on the training of those promoting animal husbandry is based on a Guatemalan case study. This training, aimed at Third World countries, provides the basis for many of Vétérinaires Sans Frontières' development projects. However, these guidelines must be adapted to specific situations. The booklet is available in French (free of charge) and in Spanish (30 Francs).

Dessins sans frontières

by Coopération française

This 64 page booklet about 'drawings without frontiers' contains 250 drawings of all kinds of livestock plus drawings of equipment, medicine, parasites and people. It also contains information on how to draw and is available with French, English and Spanish wording and is free of charge. The booklet is also available as a CD-ROM for 50 Francs.

Farming with little land

Maybe you have no land or just a small garden. Try planting vegetables which grow on vines or up poles and need little space on the ground. You could grow them up the side of your house or along fences, in unused corners. You can plant one or two vines in every small, sunny space. Some examples of such plants are cucumbers, gourds, tomatoes, malabar spinach, passion fruit, choyote (or christophine) and all kinds of beans (eg: Lima bean, runner bean, winged bean, lablab bean). You could also plant vines in large containers such as big clay pots, tins or barrels filled with compost.

Most vegetable vines grow best when planted in the rain season. Dig pits at least 30cm square and 30cm deep. Mix the dug out soil

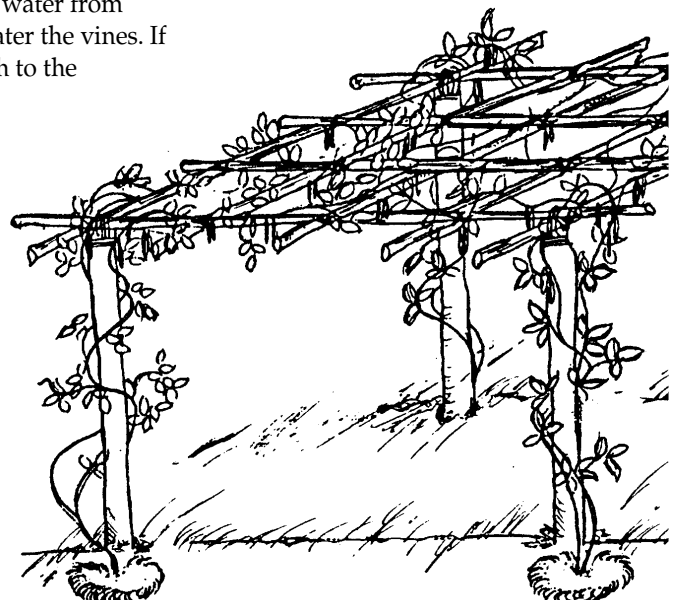


with plenty of manure and compost and then replace it and press down firmly. Plant three or four seeds in the centre and water well. Once established, just leave one or two seeds growing unless you grow two or three different vegetables in the same hole. Use waste water from cooking or washing to water the vines. If the vines are close enough to the house, you can dig little channels or use bamboo pipes or hollow logs to carry water straight to the plants. Mulch and cover the soil around the vines with straw, paper, pebbles or plastic sheets.

Vines have weak stems and cannot stand on their own. They need support from posts, wire, trees or string. Take the time to support the vines and

make sure no fruit or vegetables touch the ground.

Information from the Developing Countries Farm Radio Network, 366 Adelaide Street, West Suite 706, Toronto, Ontario M5V 1R9, Canada.
Fax: (416) 971 5299 E-mail: dcfm@web.net.



Managing a borehole

by *Abdou Yaba Diop*

Drought and lack of water have always been frequent in rural Africa. At the beginning of the 1980s governments and NGOs built various facilities – such as dams, wells and piped water systems – to try to overcome this problem. However, several years on, many of them are no longer working, often because of bad management.

In my position as secretary of the Management Committee for our borehole, I would like to share how we have succeeded. Four villages within a 2km radius use the borehole. The management committee, which is voluntary, is elected by the villagers in the presence of the local authority. It is made up of eleven members with a President, Vice-president, Treasurer, Secretary and includes four collectors who are responsible for collecting money from those who use the borehole.

Regulations

Each person over the age of five who uses the borehole pays 100 CFA a month (just over £1 a year or US \$2). However, some people have pipes to use in their homes and vegetable gardens and have a

meter installed – so they pay according to how much they use. Visitors to the area who stay for more than a month must also pay. Anyone who does not pay their contribution before the 10th of each month will be banned from taking water, together with their whole family.

A technician who lives in the village is responsible for the mechanical maintenance of the pump and engine. He is paid for his work. An operator manages the borehole and is responsible for making sure it does not run at the hottest time of the day. The engine is kept in good condition by regular servicing.

Every month a check of the accounts is done in front of all the members of the management committee and the meeting is open to anyone. Income and

expenditure are checked. After planned expenses have been taken out the remainder of the money goes into the bank.

Other activities

As well as providing water, the committee has encouraged economic activities. For the past five years the committee has bought peanuts and cereals when prices are low. When prices are high, they sell these back to the local people at a slightly higher price but still a lot less than the market rate. This small profit is used to enable people to take out small loans for three months – usually with a 10% rate of interest.

Everyone in the villages is aware of the importance of a borehole in a place where water is like gold – and everyone knows how important it is to make sure it works effectively. Because of the attention we have paid to good management and paying for the water we use, our borehole is still working well even after 15 years of operation.

Abdou Yaba Diop is the Secretary of the Management Committee of the borehole at Keur Yaba Diop, PO Box 50, Khombole, Senegal.

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

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



Pumps and boreholes will not last long without careful management.

TEARFUND

