

Improving food security

by Dr Ruvimbo Mabeza-Chimedza



Gyanu Kumar Shakya Share and Care Nepal

Food is a high priority for fully productive lives.

Food security exists when people have enough basic food at all times to provide them with energy and nutrients for fully productive lives. When poor people are asked what their highest priority is for themselves and their family, very often their answer is food. The first Millennium Development Goal (MDG) is 'to eradicate extreme poverty and hunger'. This goal is essential for achieving the other seven MDGs.

Progress has been made in improving food security at the global level. However, the situation is still severe in some countries, especially in sub-Saharan Africa and South Asia. While poverty is the main cause of food insecurity across the world, there are particular issues that make poor people even more vulnerable. These include:

- climate change
- HIV
- conflict
- poor political and economic governance.

Four pillars of food security

The concept of food security can be divided into four main areas:

- availability of food
- access to food
- quality and nutritional value of food
- stability in provision of food.

Governments and development organisations that want to improve food security must consider activities in all of these areas.

AVAILABILITY OF FOOD

It is essential that people have enough food available for their survival. Often there is not enough land available to provide food for local people. This is partly because land is being used to benefit people in countries of the North, such as being used to grow food, animal feed or biofuels. Where there is not enough food available, food needs to be imported. In very difficult situations people rely on food aid.

ACCESS TO FOOD

Sometimes people do not have access to food even when it is available at national level. This is a particular issue for poor households without access to land. There are two important aspects of access to food:

- **Economic access** People need to have money to buy food and agricultural inputs. Food prices also affect people's ability to buy food. Food prices are influenced by local and global factors, including the impact of droughts on harvest, government policies and trade agreements.
- **Physical access** People may live far from the market or insecurity may prevent them from travelling. They may not have access to transport or there

In this issue

- 3 Editorial
- 4 Learning from a model village
- 6 Letters
- 7 Developing grain banks
- 8 Natural pest management
- 10 Promoting efficient markets
- 12 Conservation farming in Zambia
- 13 Bible study
- 14 Improving nutrition in Bolivia
- 15 Resources
- 16 Floating gardens

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 Rachel Blackman, Tearfund, 100 Church Road, Teddington, TW11 8QE, UK

Tel: +44 1746 768750

Fax: +44 1746 764594

Email: footsteps@tearfund.org

Website: www.tearfund.org/tilz

Sub Editor Rebecca Dennis

Language Editor Helen Machin

Administrators Judy Mondon, Sarah Carter

Editorial Committee Babatope Akinwande, Ann Ashworth, Steve Collins, Paul Dean, Mark Greenwood, Martin Jennings, John Wesley Kabango, Sophie Knapp, Ted Lankester, Huw Morgan, Mary Morgan, Nigel Poole, Naomi Sosa

Design Wingfinger Graphics, Leeds

Illustrations Rachel Swift

Printed by Aldridge Print Group on 100 per cent recycled FSC accredited paper, using environmentally-friendly processes.

Translation L Fernandes, E Frias, A Hopkins, M Machado, F Mandavela, W de Mattos Jr, S Melot, N Nguesso, G van der Stoel, S Tharp, E Trewinnard

Mailing List Write, giving brief details of your work and stating preferred language, to: Footsteps Mailing List, Tearfund, 100 Church Road, Teddington, TW11 8QE, UK.

Email footsteps@tearfund.org

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

Copyright © Tearfund 2008. All rights reserved. Permission is granted for the reproduction of text from *Footsteps* for training purposes provided that the materials are distributed free of charge and that credit is given to Tearfund, UK. For all other uses, please contact footsteps@tearfund.org for written permission.

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 a Christian relief and development agency building a global network of local churches to help eradicate poverty.

Tearfund, 100 Church Road, Teddington, TW11 8QE, UK.

Tel: +44 20 8977 9144

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

may be physical barriers such as poor quality roads, a broken bridge or a road that is washed away.

QUALITY AND NUTRITIONAL VALUE OF FOOD

Food needs to be safe to eat and of good nutritional quality. Good nutrition is important for growth and health. If someone has access to enough good food, clean water, sanitation and health care, their body's basic needs will be met.

Good nutrition is especially important for children, yet hunger and malnutrition kill millions of them every year. In such situations child feeding programmes and targeted food distributions are an important part of any response.

STABILITY IN PROVISION OF FOOD

Households and individuals must have access to food at all times, either fresh or stored food. However, sometimes there are situations that can affect this. These can be:

- **external shocks** such as droughts, floods, conflict or poor political and economic governance
- **internal shocks** such as loss of income or illness.

Key issues to consider

There are some important issues that affect the achievement of the four pillars.

GOOD POLITICAL AND ECONOMIC GOVERNANCE

Many organisations now include an individual's right to food as part of their advocacy for good governance. This might include:

- ensuring good planning and programming for food security
- helping the poorest people after shocks, such as price increases or poor harvest
- ensuring that food is not being used as a weapon of war or oppression
- tackling corruption so that scarce resources are directed to the production of essential food items rather than luxury items for the wealthy
- ensuring that trade rules and agreements are fair so that small-scale farmers are supported.

HIV

There is a close relationship between HIV and food security. People living with HIV should eat food of high nutritional value

Discussion questions

- 1 Which of the four pillars affects food security the most in your community or country?
- 2 Is food aid provided in your country? What alternative sustainable solutions are there? (For example, see the article about grain banks on page 7.)
- 3 Do poor households find it difficult to access food, even though there is enough available? What are the reasons for this? What action could be taken to enable them to have enough food to eat?
- 4 How much nutritional knowledge do local people have? What action can be taken to improve this knowledge?
- 5 Make a list of external shocks that affect people locally and nationally. How can some of these shocks be addressed? What systems can be put in place to prevent natural shocks having a big impact on food security? (For example, see the article about floating gardens on page 16).
- 6 Are you or people in your community affected by HIV? How does HIV affect food security? What can be done to help reduce the effects?
- 7 What local agricultural practices are damaging the environment? What other options are there? (For example, see the article about conservation farming on page 12).
- 8 What are the gender issues related to food security in your community or country? What action needs to be taken to empower women? How can men support women in ensuring household food security?
- 9 How can decision-makers be influenced to ensure that people's right to food in your country is respected?



MikeWebb Tearfund

People need to have good access to food.

- the death of productive family members, along with their farming knowledge and skills
- reduced assets that can be used to buy food, due to spending on healthcare or funerals.

People living with HIV should be encouraged to plant crops that are less physically demanding, such as fruit trees, in preparation for when their illness becomes worse.

SLOW GROWTH IN AGRICULTURE

In many areas of the world there is slow growth, or even steps backwards, in agriculture. In many countries although most people are farmers, they are unable to produce enough food to feed the whole population. This means that some countries have to import food or rely on food aid.

In many countries, hunger and malnutrition are greater in rural areas than in urban areas, even though most people live in rural areas and make their living from agriculture. Numerous studies in sub-Saharan Africa have found that growth in the agricultural sector has a much greater impact on reducing poverty and hunger than urban and industrial growth. Increasing and diversifying agricultural productivity is therefore very important in addressing the food insecurity challenge. One area which needs to be improved is irrigation. Nearly half of the world's food is grown using irrigation techniques, but these techniques are currently very inefficient.

As part of improving agricultural productivity, environmental issues need to be addressed. Although people in rural areas have conserved much of the rural environment over many years, increasing hunger and population pressures have driven them to carry out some agricultural practices that are damaging the environment. Climate change is increasing the likelihood of crop failures and food insecurity.

GENDER EQUALITY AND EMPOWERMENT OF WOMEN

Women are often primarily responsible for household food security. In many countries women contribute most of the labour in food production. Women are also responsible for the majority of the food processing and preparation. They ensure that children and all other members of their households are fed and nourished.

Yet women rarely receive as much agricultural support as men, such as loans and agricultural extension services. This means that they do not produce as much food as they could for their families.

Governments and organisations must consider gender issues related to food security if progress is to be made.

Dr Ruvimbo Mabeza-Chimedza is an independent consultant. She specialises in food security and livelihoods.

Email: ruvimbo@mweb.co.zw

in order to stay healthy. Good nutrition is also vital for people taking antiretroviral medication. Even if food is available within a household affected by HIV, there can be malnutrition. This is because illnesses related to HIV can reduce appetite and the body's ability to absorb nutrients.

As HIV tends to affect productive adults it has a huge impact on food security. This can be due to:

- an individual's lack of strength to work or farm



Rebecca Dennis
Sub Editor

EDITORIAL

Food is a basic human need and right. If we do not have enough good quality food we will become ill and eventually die. Yet the number of people around the world who are undernourished continues to grow. According to the Food and

Agricultural Organisation of the UN, 850 million people in the world are affected by food insecurity, of whom 820 million live in developing countries.

Since mid-2007 the price of food and fuel has increased considerably. Across the world, in countries such as Burkina Faso, Haiti and Indonesia, there have been riots and protests against the price increases. The effects of climate change, such as droughts and floods, are also increasing food insecurity and this is likely to get worse in the future.

In this issue of *Footsteps* we consider important topics related to food security and look at practical ways to improve the situation. On page 10 we consider the important relationship between farmers and traders. There are also articles about grain banks (page 7), natural pest management (page 8), conservation farming (page 12), and floating gardens (page 16).

We hope this issue provides tools to help our readers improve their own food security and that of the people they serve.

Future issues will focus on migration and managing everyday risk.

Rebecca

Learning from a model village

A comprehensive programme to address food insecurity in a Dalit village in Nepal

by Luma Nath Adhikari



Steep slopes, poor soil quality, a dry climate and deforestation make farming difficult.

The district of Mugu is located in the Himalayan region of Nepal. Only five per cent of the land in the district can be used for agriculture. This is due to steep slopes, poor soil quality, a dry climate and deforestation because of pressure on the forests for fuel, fodder and bedding materials. On average each family is only able to grow enough food to feed itself for four to six months of the year. Some low-caste families grow considerably less than this, particularly the Dalit families (the so-called 'untouchables' in the Hindu caste system). Dalit families often live in isolation and form their own communities. They are excluded from social rituals and access to community forest and common land. The majority of Dalits are landless or have a small plot of land. They often work on other farms as bonded labourers.

Setting up the programme

United Mission to Nepal (UMN) has worked with the Dalit community since 1999. In 2004 it set up a team in Mugu to address the root causes of poverty. The team worked with local organisations to carry out an assessment of the social and economic situation in Mugu.

A local organisation, the National Dalit Development Forum (NDDF), was selected for partnership. It was involved in advocacy work which focused on Dalit rights. UMN carried out a series of discussions with NDDF and the Dalit community to decide what action could be taken. They decided to implement a 'model village' – a programme that would empower the Dalit community to achieve food security. The Dalit village of Tallighuire, which is home to nineteen households, was selected to participate in the programme. UMN staff helped NDDF

and community representatives to design and implement an action plan.

The programme was designed in a comprehensive way. It focused not only on food issues, but also considered the social, economical and educational factors that contribute significantly to the poverty of the Dalit families. Key components of the programme were:

- promotion of vegetables and food crops
- veterinary care and animal management
- development of a tree nursery and plantation
- immunisation and family planning services
- sanitation improvements
- savings and credit schemes
- community education
- training of community leaders in more detail about some of the components of the programme so the work could be sustained.

Non-formal education was a key entry point to reaching the Dalit community, particularly women. It was also useful for achieving other components of the programme. The education component initially focused on reading and writing skills and gradually expanded to include practical education and provision of scholarships for Dalit children. In the adult classes, participants learnt about family planning, sanitation, child health, hygiene, immunisation and nutrition as well as household management and environmental issues. Those who participated in the classes gradually started group activities related to savings, village sanitation and campaigns about Dalit issues.

All of
the programme
outcomes contribute
to reducing poverty
in an integrated
way



UMN

Maize is one of the most common food crops.

UMN's role

NDDF took responsibility for overseeing implementation of the programme while UMN provided support to NDDF. This involved building capacity in technical development activities and organisational management. Methods used included mentoring and coaching of NDDF staff, frequent visits to communities and training about accounting, transparency and good governance.

UMN provided NDDF staff with support in planning and implementing the model village programme by:

- Helping them to carry out assessments in the community and within the organisation.
- Supporting them as they developed the programme with the community and local organisations.
- Making links with donors at local, national and international level.
- Helping them to review the process and results to ensure sustainable impact in the community and ongoing organisational capacity.
- Encouraging them to record and share their learning with development organisations and government agencies.

Results

The programme consisted of a range of activities that directly or indirectly contribute to food security at household level.

- Every household now has a kitchen garden.
- Seed multiplication of major food crops, particularly maize and wheat, has contributed to greater food production.
- The introduction of plantations and slope land management practices has reduced soil erosion.
- A tree nursery has been established and fruit trees have been planted.
- Goats and chickens are raised and used as a source of income.

Lessons learnt

- 1 It is important to ensure community participation from the beginning of the programme. The leadership of the local NGO, NDDF, helped to develop a sense of ownership within the community.
- 2 The 'model village' was designed as a comprehensive programme which aimed to have immediate outcomes that could be directly observed by the community members. This helps to increase self-esteem.
- 3 For the programme's long-term sustainability, it was important for UMN to develop the capacity of NDDF, both in technical development issues and organisational management. Building this capacity should be long-term (five to seven years if necessary). Regular reviews and a willingness to make changes, as a result of lessons learnt, will ensure that the capacity development remains relevant and effective.

- Improved animal management practices and a veterinary service have reduced animal deaths.
- Every individual can explain the basic importance of nutrition, health and hygiene.
- All children attend school and women attending the literacy classes can read and write.
- Mothers are aware of immunisation and the coverage has been increased.
- The self-esteem of women and other members of the Dalit community has improved. Now Dalits have equal participation in community meetings and drink tea with other caste groups in public places. They are included in political forums and are representatives on school management committees.
- Due to NDDF's focus on advocacy for the rights of Dalits, people from the community now feel able to visit development organisations and government agencies to request various services.

The programme was extremely successful in ensuring food security. Households now feel they have more control over food supplies and can manage their food security better.

All of the programme outcomes contribute to reducing poverty in an integrated way. From the perspective of sustainable development, many small efforts contribute to a big change. The success and sustainability of the programme is more about empowerment of the people than the activities themselves or the very immediate results. Many other communities in the district of Mugu have been inspired and are planning to implement a similar programme.

Luma Nath Adhikari is the Lead Advisor on Food Sovereignty for United Mission to Nepal

*PO Box 126
Kathmandu
Nepal*

*Email: marketing@umn.org.np
Website: www.umn.org.np*

Extracting oil

I am writing in relation to Abbé Kussa's letter in *Footsteps* 75. I teach Appropriate Farm Technologies at the Agricultural Training Institute in Zambia. From my experience the best way of extracting oil from *Jatropha curcas* (also known as Barbados or Physic nut) is to use a manually powered oil press. In Zambia it is called the Yenga oil press and costs about US\$250. It is possible to press up to 50kg of seeds in one day.

This is the process:

- 1 Heat the *Jatropha* seeds using the sun or an oven. This makes it easier to extract the oil.
- 2 Feed the pre-heated seeds into the machine and extract the oil.
- 3 To purify this crude oil, mix the oil with water (one part water to five parts oil). Boil the mixture until all the water has evaporated (all bubbles gone). Let the mixture settle for several hours until the oil becomes clear. Be careful to avoid getting burnt.
- 4 The oil can also be purified through filtering or by letting the unpurified oil stand for several days.

Remember that the oil is poisonous and should not be eaten as it can cause vomiting and diarrhoea.

Aswelo Tembo
Agricultural Training Institute
PO Box 620272
Kalomo
Zambia

EDITOR'S NOTE *Biofuels can contribute to food insecurity if land is used to grow fuel crops instead of food crops. A way forward is to grow crops that provide food and also produce waste that can be used for biofuels, such as sweet sorghum.*

Peace-building

I would like to thank you for *Footsteps* 75. I was really challenged by the whole issue, but especially the article on the front page about peace-building in Uganda. 'Peace' is a simple word to use, but it is hard to put it into action, particularly in Africa. In my own country, Kenya, we claim to be peace promoters, especially following the unrest which happened after the recent general



Greenleaf

election. However, in my opinion we have laid down our weapons but the conflict continues in people's hearts.

Thank you for updating me on the peace-building work which is happening around the world.

Agapetus Mathew Wamalwa
c/o St. Catherine of Siena Parish
PO Box 230
00621 Village Market
Nairobi
Kenya

Email: agapetus_mathew@yahoo.com

Listening to children

Becoming a good communicator, especially with children, is a very relevant learning experience. It is important for adults to learn to listen to children about their worries, their stories, their fears and their desires. This is especially important for children living in difficult and stressful situations as it provides good support for them. Children feel reassured when they can share their feelings and concerns with someone. Let us not neglect our children. Let us listen to them and we will learn more.

Joël Kiramba
Co-ordinator of APEDI
Email: joelecpa@yahoo.fr

EDITOR'S NOTE *Thank you for your letter and for raising an important issue. Be careful not to break a child's trust if they share confidential information, unless they are at risk of harm or abuse. Ask the child if they would like you to act on what they have told you, but remember never to make promises you cannot keep.*

Helping children

I work for Inspiring Future Foundation, a local children's organisation in eastern Uganda. We help orphans and vulnerable children to live better lives by working alongside the community. In June 2008 we carried out a participatory needs assessment of 15 households of orphans or vulnerable children. This showed us the need to set up a community children's welfare centre to help to mobilise the community to respond to the needs of children. The centre could be staffed by Inspiring Future Foundation volunteers or by community members. The centre could also be used as a place for the community to meet together.

We would like to hear from *Footsteps* readers who have knowledge and experience of setting up and managing a community children's welfare centre.

Patrick Ejiku
Founder and Chief Resources
Development Administrator
Inspiring Future Foundation
PO Box 824
Soroti
Uganda
Email: patrick_ejiku@hotmail.com

Developing grain banks

by Abdoul-Azize Sarki

The economy of Niger relies mainly on agriculture. However, over the last 30 years, drought and environmental problems have led to poor harvests. Poor people have little to eat between harvests, which has caused them to leave their fields in order to earn money, or to move away from rural areas altogether.

Local church members realised that emergency aid is not a good solution to the food security problems because it keeps communities dependent on outsiders. They therefore decided to help their communities to establish community grain banks. This was done with the help of the development and relief department of UEEP (Union des Églises Évangéliques Protestantes du Niger). These banks build up a stock of grain to meet basic food needs between harvests, especially if the harvest has been poor or prices have risen too high.

Setting up the grain banks

To increase community ownership, UEEP ensured the following:

- The communities could choose grain banks as a solution to their problems.
- Communities received training about maintaining and managing grain banks.
- Community members participated, such as by helping to construct the grain bank.
- Women and children actively participated in the work.

- The local church, as a motivator within the community, was involved in every stage of setting up a grain bank.

The work involved a number of stakeholders:

- Community members, who were responsible for setting up a management committee, protecting the grain from theft and pests, selling grain at moderate prices and investing income in a bank account.
- Representatives from the local churches, who monitored the use of the grain banks.
- UEEP staff, who organised an information and awareness-raising campaign and trained the members of the management committee.
- The local authorities, who monitored the quality of operations of the grain banks by ensuring that the sales and loans systems worked efficiently and that the regulations were respected.
- Donors, who funded the stocks of grain for the first year of the project.

Operating the grain banks

Once the grain banks were constructed, stocks of grain were provided for the first year of operation. The community decided which system they would like to use to obtain the grain between harvests. There are two main systems, both of which are managed by the management committee.

The loan system One sack of grain is loaned to each family, which is then repaid after harvest, along with interest and a fee for running costs. The decisions about interest and fees are made by the General Assembly of the village.

The sales system The General Assembly fixes the price of grain according to the market price, which can be determined



Andy Atkins Tearfund

A family grain bank in the area where UEEP works.

from the cost of buying the initial stocks. Each person is allowed to buy a specific amount of grain. The income is invested by the management committee in a savings account with a bank or co-operative.

The aim is that after six years, each grain bank will double its stock so that a new grain bank can be set up in another community.

Results

Some of the grain banks have not been successful. This was mainly due to grain banks not being a priority in the village or poor management. In some cases women were poorly represented on management committees and committee members were non-literate and therefore did not keep good records. Good training and support for management committees is therefore essential.

However, in many communities grain banks have been successful in ensuring food security between harvests. As they have access to food, community members are able to work in their own fields rather than going to work elsewhere for cash. The price of food is regulated and the capacities of community members have been strengthened. As the local church has been involved throughout, attitudes towards the local church have improved.

Abdoul-Azize Sarki is a Programme Officer for the development and relief department of UEEP.

BP 2630

Niamey, Niger

Email: cadueepn@yahoo.fr



Jo Khimnung Tearfund

Small grain stores in Tougana village in Niger.

Natural pest management

Article compiled by Rebecca Dennis



'Natural pest management' is a method of controlling pests without using chemicals. Instead, other insects, birds, animals, plants or manual techniques are used.

Chemical pesticides have many disadvantages. Although they remove the pest, they also kill many of the insects that are useful to the crop, can pollute soil and water supplies, and make people sick. The benefits of chemical pesticides decrease over time as pests become resistant to them. This means that the pesticide kills the weaker pests, leaving the strongest to breed a new generation which is immune to the pesticide.

What is a pest?

A pest is an insect or animal which causes damage to a plant or crop. It is possible for an insect or animal to be a pest in one situation and beneficial in another. Pests come in all shapes and sizes. Here are some of the common pests and the problems they cause:

- Borers that weaken the plant such as **termites** and **stem-borer** in maize
- **Aphids** which pierce the leaf or stem and suck the sap, weakening the plant and spreading disease
- **Beetles, weevils** and **caterpillars** which eat leaves. (It is important, however, to remember that butterflies are useful for pollination.)
- **Grasshoppers** and **locusts** which bite the top of seedlings
- Larger animal pests such as **monkeys, rats** and **birds** (for example pigeons and crows) that eat seeds and plants.

Natural pest controls

PLANTS

- Companion planting is an effective way of controlling pests. It involves arranging different plants in alternate rows. For example, if melons are planted next to radishes, beetles will not move between rows of melons because they do not like the taste of radishes.
- Certain plants can be used to deter pests. For example, onions or garlic planted around the crop will discourage insects because they do not like the smell.



PREDATORS

- **BIRDS** Some birds eat insect pests. Birds can be attracted to a location by putting out bird seed or growing plants that produce seeds that birds like to eat but which are not useful to the farmer.
- **ANIMALS** The majority of small animals eat insects and other pests. For example, toads can eat thousands of insects each month, including cutworms, slugs, ants and caterpillars. Spiders eat many insect pests and snakes eat rodents. These small animals can be attracted by growing plants that they like to eat or providing natural shelter which protects them from other predators.
- **INSECTS** Some insects make good predators because they eat other insects. A good example of this is the ladybird. Ladybirds only eat aphids, such as greenfly and blackfly, and do not eat beneficial insects. They can eat 40–50 aphids per day and their larvae can eat even more. Insect predators can be encouraged by planting certain plants or flowers nearby which they benefit from.



Learning about pests

Before deciding which pest control method to use, it is important to learn about the pest. It would be a mistake to waste time and money controlling an insect or animal when it is not even bothering the plant.

1 Identify the pest For example, if there are holes in leaves, go to the plant at different times of day and night to see if you can find the pest in action. It can be helpful to talk to neighbours and local farmers to find out what pests are common locally.

2 Learn about the pest Learn about its life cycle, food and natural enemies. Often there is a stage of the life cycle at which it is easier to control the pest, such as getting rid of eggs before the insects hatch. A pest can be controlled by removing its food source or introducing natural enemies (predators). To obtain this information, talk to local farmers and extension workers or see if there are books in a local library.

3 Monitor the behaviour of the pest

Does the pest appear on a seasonal basis? Can it be found all over the plant or crop or only in certain places? Is the pest increasing or decreasing in number?

4 Decide when to take action

Remember that all insects are part of the natural environment and we should try not to disturb the natural balance unless it is necessary. It is only worth investing money in pest control if the cost of damage by the pest is greater than the cost of controlling it.

5 Evaluate the effect

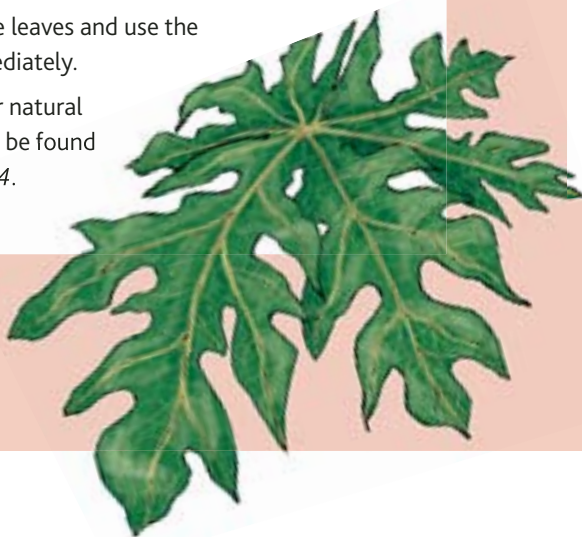
After a natural pest control method is used, evaluate its effect. Will you use this method again for this pest or should another be tried? Did the method affect other insects? Was that a good thing or a bad thing?

NATURAL PESTICIDES

It is possible to create pesticides using natural ingredients. For example, caterpillars and aphids can be controlled using a papaya leaf spray. To make the spray:

- Shred 1kg of fresh leaves and soak in ten litres of water, together with two tablespoons of kerosene and some soap.
- Leave to stand for at least two hours (or overnight).
- Remove the leaves and use the spray immediately.

More ideas for natural pesticides can be found in *Footsteps 54*.



MECHANICAL CONTROLS

Mechanical pest controls are very simple to put into practice. They can include:

- Picking larger insects off the plant by hand. This is effective in small plots before the pest breeds, but is not a practical solution in large fields.
- Erecting barriers to protect plants, such as netting to stop birds pecking and covering fruit to protect it from fruit flies.
- Using traps such as rodent traps, sticky traps for insects or snail and slug traps (made from a yeast and water mixture).



Promoting efficient markets

by Nigel Poole

Agriculture has been neglected by many governments and organisations over the last two decades. Most development policies have promoted broad economic growth in the hope that it will bring widespread benefits. However, according to the 2008 World Development Report, this approach has failed in many countries – inequalities have grown and many of the poorest people, who live mostly in rural areas, are no better off than they were 20 years ago.

Organisations are now renewing their interest in rural development and the rural economy. These efforts have been boosted by concerns about the dramatic increases in food prices which caused riots in many countries during 2008 and by the threat of climate change to food security.

Agricultural marketing is a key issue that needs to be addressed if rural economies are to be revived.

Changing attitudes to traders

When food supply problems arise, people often complain about traders and middlemen, accusing them of making

money at the expense of the hungry. Although exploitation and cheating does happen, not all traders are dishonest. In judging so quickly, people often fail to understand the traders' situation:

- Many small-scale traders are also poor.
- Traders are responsible for transporting food to market which can be risky. Prices can fall after the trader has bought the produce from the farmer, and poor quality roads mean that food can be damaged during transportation. It takes time and effort to transport goods, and women traders face the additional problem of harassment.



Onion seller in Burkina Faso.

- It must also be said that farmers sometimes cheat as well!

Traders are vital in the chain that links farmers with consumers and their importance needs to be better understood by farmers, consumers and policy makers. For example, they can provide information, credit and inputs to places that government extension workers do not reach. Also, without traders, markets work less efficiently and everyone suffers – farmers get lower prices, customers pay higher prices, less food is available and the quality of food can be low. Where there is mistrust between buyers and sellers, food security is threatened.

Building co-operation between farmers and traders

Where government development policies have failed to reach rural areas, traders have the potential to help local development using the market system. Expanding agricultural markets can help to provide local finance, food processing and employment. As local agricultural markets expand, the trader associations that start to develop can take on responsibility for regulating markets and controlling exploitative practices.

Case study from Ghana

Ghanaian traders had been buying tomatoes from Burkina Faso and delivering them to the capital city, Accra, for many years. Unlike the Ghanaian farmers, the farmers in Burkina Faso allowed the traders to grade and select the tomatoes they wanted to buy. This enabled the traders to choose tomatoes that could survive the journey to the capital city.

Ghanaian farmers had been promised that a local processing plant would buy their tomatoes. Unfortunately the processing plant was not yet working. As the traders preferred to buy their tomatoes from Burkina Faso, the farmers were unable to sell their tomatoes, so they were rotting in the fields. The farmers started to protest violently against the traders.

To resolve the dispute a meeting between the traders and the farmers was organised by the local Security Council, the Ghana National Tomato Traders Association and the winner of the 2006 National Best Farmer award. The farmers apologised for their behaviour and a deal was agreed between the two sides. The traders agreed to buy a large quantity of tomatoes from the north of Ghana if the farmers allowed them to grade the tomatoes beforehand and only buy the highest quality tomatoes. A committee of traders and farmers was set up to negotiate prices each week. Another committee was set up to solve any disagreements between the farmers and traders.

Since the meeting, tomato trading activities are better organised, traders do not have to travel as far and the relationships between farmers and traders have improved.

Expanding agricultural markets can help to provide local finance, food processing and employment

The Royal Tropical Institute and International Institute of Rural Reconstruction have recently published a book entitled *Trading Up* which tells stories of African farmers and traders and how co-operation has helped them all to benefit. It shows how to create mutual understanding between farmers and traders by finding joint solutions to their business problems.

Key principles

From the case studies in the book, some key principles have emerged:

- **ORGANISATION** Farmers and traders need to organise themselves if they want to improve their business. The decisions of most individual farmers and traders are too small to make a difference. But if they team up with friends and neighbours, they can support one another to strengthen skills, share technologies, combine products and services, learn about market demands, gain access to finance and negotiate with clients.
- **UNDERSTANDING** Markets only function well if everyone involved in the chain respects the roles and needs of others. Farmers should understand that traders are vital for getting products to consumers and supplying inputs such as seeds, fertilisers and veterinary medicines. Traders should understand that farmers

need good marketing conditions to supply the food that is needed and that they should be paid fair prices too.

- **SPECIALISATION** Farmers do not often make good traders; traders are not usually successful farmers. Once traders and farmers recognise the importance of each other's roles, they can save time by concentrating on what they do well and improving the quality of their products and services.
- **CO-ORDINATION** As farmers and traders specialise, their activities need to be linked together. Information is

Role of the local church

The local church can make a huge contribution to overcoming poverty. One of its strengths is its commitment to improving relationships. In your community consider what the local church can do to:

- bring together farmers and traders to talk with each other and to discuss how they can co-operate better
- work with farmers and traders as they lobby local authorities to support local markets
- share learning with other communities, using its networks.

Markets only function well if everyone involved in the chain respects the roles and needs of others

important so that farmers produce what consumers want, and traders deliver the inputs and credit that farmers need. It is very important that these activities happen at the right time. For example, if fertiliser arrives too late the crop will be affected. To link these activities, communication and close working relationships are essential.

- **PARTNERSHIP** The final stage in working together is to develop a shared vision and a joint action plan to identify new market opportunities and overcome problems together. Farmers and traders could lobby the local government for better roads and market stalls and for the provision of electricity for developing processing businesses. It may be possible to introduce or change local laws about how markets should operate, and how contracts are made between buyers and sellers.



Richard Hanson, Tearfund

Permanent market stalls help to improve economic opportunities for traders and farmers.

Dr Nigel Poole is the Academic Programme Director of Agribusiness for Development at:

SOAS Centre for Development, Environment and Policy and London International Development Centre, University of London

High Street, Wye

Ashford, Kent

TN25 5AH, UK

Email: n.poole@soas.ac.uk

This article is based on the book Trading Up: Building cooperation between farmers and traders in Africa, published by Royal Tropical Institute (KIT), Amsterdam and International Institute of Rural Reconstruction (IIRR), Nairobi. See Resources, page 15, for more information.

Conservation farming in Zambia

by Joan Mute

In many countries in southern Africa, food insecurity is increasing. Drought is a key factor, but farming practices are also a major cause. Food insecurity is a particular issue in rural areas, where agriculture is the main economic activity. In 2002 the Evangelical Fellowship of Zambia (EFZ) identified three districts where help was needed to improve food security.

Developing the food security programme

EFZ first carried out a needs assessment in one of the districts. The results showed that the lack of food in the area was caused mainly by the farming practices used. The needs assessment also showed that some farmers in the area had reaped a successful harvest in spite of the droughts. This was due to their knowledge and practice of

conservation farming methods over a long period of time. These farming methods aim to conserve soil and water while at the same time providing a sustainable livelihood for the farmer.

After the needs assessment, EFZ worked alongside village committees to design a food security programme. This programme targeted more than 2,000 households. One of the key parts of the programme was the

promotion of conservation farming in place of the conventional farming methods that were being widely used in the area. Some of the differences between conventional and conservation farming methods are explained in the box below.

Due to the proven benefits of Conservation Farming the Government of Zambia had already been promoting it across the country. EFZ decided to work alongside the Ministry of Agriculture and the Conservation Farming Unit (CFU) to distribute information about conservation farming to the households targeted by the programme. Each farmer was also provided with seed and fertiliser.

Workshops about conservation farming were carried out to train people to become trainers at community level

Some examples of the differences between conventional and conservation farming

Conventional farming

Some aspects of conventional farming negatively affect crop yields:

- **Burning of residues (crop waste) before ploughing** Residues are useful for:
 - protecting the soil from being washed away, improving water infiltration and reducing soil temperatures
 - maintaining soil structure and fertility when termites and worms incorporate them into the soil.
- **Ploughing using oxen** Ploughing the whole field wastes energy, reduces yields and destroys the soil:
 - Farmers usually plough after the rains. This means that there is a delay in preparing the land. For each day of delay after the first planting rains, some of the potential yield is lost.
 - The ploughed soil is exposed to wind and rain which remove the surface soil.
- **Ridging up with a hoe** This is where ridges are made into the soil to leave furrows that act like a drain. The problem with this is that rain water starts to erode the ridges and gullies soon develop.

- **Hoe minimum tillage** This is where a hoe is used during the first good rains to make planting holes or to scratch planting lines. It is easier to do than ploughing and uses less labour. However, as the soil between the holes or planting lines remains hard, the rain runs off it and takes the fertilisers with it.

Conservation farming

This is a combination of methods which aim to conserve water, soil quality, moisture, fertility and seed production, as well as the farmer's energy, time and money. Some of the key aspects and benefits include:

- **Planting in basins** Farmers create basins in the soil in which seeds can be planted. When the rains come the water is trapped in the basins, allowing roots to develop and stopping the top soil and fertiliser being washed away.
- **Leaving crop residue for the next harvest** Farmers are encouraged to leave the residues rather than burning them. This reduces soil and water loss, improves infiltration, reduces surface temperatures and in time improves soil fertility. Because seeds are planted in the same basin each

- year, the fertiliser left from the previous crop can be absorbed by the new crop.
- **Nitrogen-fixing crop rotations** Farmers are encouraged to grow legumes and other nitrogen-fixing crops in rotation to increase the natural soil nutrients. This will reduce the need for artificial fertiliser and enable them to diversify from maize into less hardy crops.
- **Early planting during the first rains** This means that farmers need to prepare land as soon as they have harvested the previous crop. Planting during the first rains enables the seeds to benefit from the nitrogen that the rains flush through the soil.

Cowpeas are used in conservation farming for nitrogen fixation.



Jon Stanhope



Conservation farming produces more maize than conventional farming.

Community meetings were held in which the programme was explained to the target households. Later on, workshops about conservation farming were carried out to train people to become trainers at community level. These trainers were expected to train individual farmer households through village-based training workshops. Farmer co-operatives were set up to enable the programme to reach farmers. Poor farmers were encouraged to join a Farmer co-operative themselves.

Results

After the harvest the households realised that the fields that had been farmed using conservation methods had yielded more than those that had used conventional methods. Other surveys confirmed that conservation farming produced on average 1.5 tonnes more maize per hectare than conventional farming. In addition, the techniques used in conservation farming meant that less fertiliser was needed.

Conservation farming improved food security for farmers because it minimised crop loss during drought.

Learning points

The knowledge and experience of conservation farming is increasing in Zambia, and gradually more households are adopting the techniques. EFZ's review had the following learning points:

- The practice of even just one or two conservation farming techniques is beneficial. Farmers give themselves a chance to test the benefits and gain confidence before using other conservation farming methods.
- Some farmers decided to introduce conservation farming methods to only one of their fields. This meant that they could compare the results with those of

conventional farming techniques. They usually found that conservation farming techniques brought higher yields.

- Success related to conservation farming will vary between regions, between crops and over time. This is mainly due to changes in weather patterns.
- Many of the benefits of conservation farming will occur gradually. It is worth investing in conservation methods, but it will probably take time to see the full benefits.

Joan Mute is a Programs Manager in the Ethics, Society and Development Department of the Evangelical Fellowship of Zambia.

*Plot 8665, Kamloops Avenue
Lusaka 10101
Zambia*

Email: evafeza@zamnet.zm



A Zambian farmer digs the basin in which he will plant his seeds.

BIBLE STUDY

God's provision in times of difficulty

The book of Ruth is set at the time of a famine in the area around Bethlehem (Ruth 1:1). Elimelech and his family left Bethlehem in search of food and went to Moab, where they lived for at least 10 years (Ruth 1:4-5). Following the deaths of her husband and sons, Naomi returned home with her daughter-in-law Ruth (Ruth 1:22).

Read Ruth 1:16-2:9

- Why does Ruth take on the responsibility to provide for her mother-in-law?
- As a young foreign widow Ruth would be very vulnerable. Why do you think Ruth stayed in Boaz's fields?
- What does Boaz learn about Ruth?
- How does he treat her?

Boaz was a man of God and followed the law of Moses in the way he managed his fields. **Read Leviticus 19:9-10 and Deuteronomy 24:19-20.**

- What are the laws?
- Why were these laws useful for someone like Ruth?
- What do these laws tell us about God's desire that the poor have a secure food supply?
- Are there similar practices in your community or country today? How can these practices be encouraged?

Read Ruth 2:10-23

- Why does Boaz respond as he does?
- How does Boaz show his concern for Ruth and Naomi?
- Who does Naomi thank for the food and kindness?

Read 1 John 3:16-20.

- How has Jesus shown his love for us?
- How should we love?
- List practical ways we can show love like Jesus to those around us.

Improving nutrition in Bolivia

by Pastor Eduardo Barja

In the mountainous area of Chuquisaca, central Bolivia, communities are discovering the nutritional benefits of vegetables. The traditional meal for the indigenous Quechua people was a hot broth made from wheat and potatoes until SETESUR (Seminario Teológico del Sur) started the Yanapanakuna project in six small isolated communities. The word *yanapanakuna* means 'let us help ourselves' in the Quechua language.

Malnutrition is a serious problem in Bolivia, especially in children and elderly people. This is due to a basic diet of potatoes and wheat, and poverty which limits people's ability to buy other types of food. Frequent illness also contributes to malnutrition. Around 27 per cent of Bolivian children under the age of five suffer from chronic malnutrition.

Yanapanakuna works for three years in each community. After that time it is hoped that the community can continue the work without help from SETESUR. The exact work varies from one community to another but in all the communities the work focuses on:

AGRICULTURE This might include: training community promoters in organic and intensive agriculture, animal health and environmental conservation; constructing greenhouses for planting fruit and

vegetables; repairing and constructing irrigation systems.

HEALTH This might include: training community promoters in basic community health care, management of medication, nutrition and malnutrition, vaccinations, first aid and HIV prevention; constructing toilets; improving water supply; providing courses in family planning and sexual health.

WOMEN'S EMPOWERMENT This might include: training in basic health care, sexual and reproductive health, nutrition, textile production for use or sale and women's rights and responsibilities; providing literary courses.

SPIRITUAL GROWTH This might include: organising meetings for worship, Bible study and prayer, with special meetings for children; training community leaders about growth and sustainability of the church.

Gabriela Garcia, home economics expert with Yanapanakuna, teaching women about cooking with vegetables.



Richard Hanson Tearfund

CASE STUDY

My name is Paulina Vedia. I am married to Máximo and we have five children. In the past I looked after my children and the animals. Some days were very difficult as we did not have enough food. After school my children would have to go out to work to earn money for the family.



Eduardo Barja

Since the Yanapanakuna project my life has changed. My husband and eldest son attended the training courses. Now I get help from them because their attitude towards the family has changed. They built me a kitchen which has made cooking easier. They are helping the neighbours to do the same.

We can now eat vegetables that my son grows. We especially like to eat lettuce with a little salt and oil but my favourite is silver-beet [chard].

Through these activities, the health and nutrition of the poorest people in Chuquisaca is improving. They no longer eat mainly wheat and potatoes, but enjoy a more varied diet including fruit and vegetables. Their immune systems are being strengthened, their ability to concentrate has improved and illnesses are less common.

Through the spiritual work of the Yanapanakuna project people are learning about the relationships between God, man, woman and the earth. Alcoholism and domestic abuse are becoming less frequent as there is more dignity and respect within communities.

In 2009 Yanapanakuna will start a new three-year cycle. The new communities will benefit from the lessons learnt in past cycles and emerging issues such as climate change will also be considered during planning.

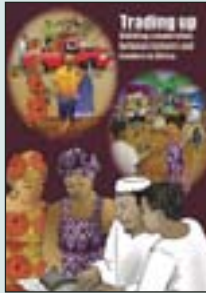
Pastor Eduardo Barja is Director of SETESUR
Calle Sargento Tejerina No 101
Esq. Pando, Casilla 201
Sucre, Bolivia
Email: edbarja@hotmail.com

tilz website www.tearfund.org/tilz Tearfund's international publications can be downloaded **free of charge** from our website. Search for any topic to help in your work.



Trading up: Building cooperation between farmers and traders in Africa

This book looks at the role of traders in the food chain. Examining issues that affect both traders and farmers, the book reinforces the message that the different groups should work together rather than disagreeing.



The book shows how traders can generate demand for farm products and help improve the incomes and livelihoods of rural people. There are 15 case studies that look at how relations have been strengthened between farmers, traders, wholesalers, processors and retailers.

Africa: € 12 (Kshs 1200!); Asia: €17;
Europe: €25; North America: US\$40.

Chain Empowerment: Supporting African farmers to develop markets

Royal Tropical Institute, Amsterdam; Faida Market Link, Arusha and International Institute of Rural Reconstruction, Nairobi.

This book shows how African smallholders can earn more from their crops and livestock by taking control over the value chains they are part of – chains that link them with consumers in



towns and cities, as well as in other countries. There are 19 case studies showing how groups of farmers improved their incomes and how development organisations helped them.

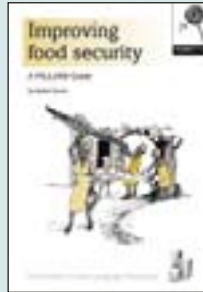
The book costs US\$20.

Both of these books are available for free download at www.kit.nl/publications and paper copies be purchased by emailing publishers@kit.nl

To order paper copies if you live in Africa or Asia, email Bookstore@iirr.org or order at www.iirr.org/bookstore. Or write to: (for Asia) IIRR Regional Centre, YC James Yen Center, Silang, Cavite 4118, Philippines; (for Africa) IIRR Regional Centre, PO Box 66873, Westlands, Nairobi, Kenya

Improving food security

This PILLARS Guide provides practical information about pest control, grain banks and new techniques for food preservation and storage. It increases awareness of the benefits of maintaining genetic variability and traditional crop varieties.



This PILLARS Guide can be downloaded free at: www.tearfund.org/tilz in English, French and Portuguese.

Free printed copies are available from: Tearfund Resources Development, 100 Church Road, Teddington, TW11 8QE, UK

Email: pillars@tearfund.org

Useful websites

www.fews.net

Famine Early Warning System Network provides early warning and vulnerability information about emerging and evolving food security issues around the world.

www.fivims.org

The FIVIMS Initiative (Food Insecurity and Vulnerability Mapping System) promotes cross-sectoral analysis of underlying causes of food insecurity, hunger and malnutrition for improved policy making, programming and action.

www.leisa.info

The Centre for Information on Low External Input and Sustainable Agriculture provides information about successes in sustainable smallholder farming.

www.conservationagriculture.net

The Conservation Farming Unit website provides information about conservation farming techniques used in Zambia.

Organisations

ECHO works to provide information to those working in agricultural development:

- www.echotech.org This website (in English) contains a wealth of information about small farm tropical agriculture, with some information available in French and Spanish.
- You can order free trial packets of seed from ECHO so that you can evaluate these plants in the communities where you work. For more information, write to ECHO, 17391 Durrance Road, North Ft Myers, FL 33917, USA. Email: echo@echonet.org
- If you have a specific technical question, email echo@echonet.org and a staff member will try to find an answer for you. Be as specific as possible and explain the setting for which you need the information.

Farm Radio International aims to fight food insecurity by supporting African broadcasters in meeting the needs of local small-scale farmers and their families in rural communities. They distribute radio scripts to over 300 radio organisations in sub-Saharan Africa. Each quarterly script package focuses on a different theme, such as nutrition, indigenous knowledge, women in agriculture or livestock. The package also includes tips for broadcasters on presenting the information and adapting it for their own listening audience. The scripts are available at <http://farmradio.org/english/radio-scripts>

Farm Radio International also shares information through Farm Radio Weekly (FRW), its on-line news bulletin for broadcasters. To sign-up for FRW visit: http://farmradio.org/english/partners/fr_weekly_subscribe.asp

For more information about the scripts or the news bulletins contact: Farm Radio International, 1404 Scott Street, Ottawa, ON, Canada, K1Y 4M8
Email: info@farmradio.org www.farmradio.org

Floating gardens



Many people around the world experience flooding. Where there is frequent flooding the growing season is affected and crops become damaged or even washed away. Another problem for poor communities is that there is little land available for growing food.

One solution, used in Bangladesh, is a floating garden. This is a base of aquatic weeds on which vegetables can be grown. The gardens float on flooded land or small ponds. They can be used all year round, for summer and winter crops, and can provide families with enough vegetables to eat and to sell.

STEP 1 Collect mature water hyacinth that covers an area of 8m by 2m. If hyacinth is not available paddy straw, coconut straw or bamboo can be used. Put bamboo poles on top of the hyacinth to make a raft. Move the raft near to a bank.



STEP 2 Collect more water hyacinth and place it on top of the bamboo poles. Weave all the hyacinth plants together. It should be 0.6m to 1m deep. Once the basic structure has been formed, remove the bamboo poles. Attach the raft to anchor points so that it does not float away.



STEP 3 After seven to ten days add another layer of water hyacinth to the top of the raft. Then add a layer of mulch, followed by soil, compost and cow dung to a depth of around 25cm.



STEP 4 Plant seedlings on to the raft. Crops such as leafy vegetables, gourd, aubergine and onions grow particularly well. Move the raft to a shadier or sunnier location as required.

STEP 5 Protect seedlings from ducks, rats and other animals using broken fishing nets or sticks as a barrier around the edge of the raft.

STEP 6 Once the crop has been harvested the raft can be reused. Eventually it will decay and can be made into compost.

Adapted from Floating Gardens in Bangladesh Technical Brief by Practical Action

*For further information:
Practical Action, The Schumacher Centre for Technology and Development, Bourton on Dunsmore, Rugby, Warwickshire, CV23 9QZ, UK*

Tel: +44 (0)1926 634400
Fax: +44 (0)1926 634401
Email: practicalaction@practicalaction.org.uk
Web: www.practicalaction.org

DO NOT use a floating garden in areas of water affected by tides or currents because the raft may get damaged.

DO NOT use a floating garden in salty water as the crop will not grow.