

Called to Care

No. 9

More and Better Food

Farming, climate change, health and the AIDS epidemic

By Anne Bayley and
Mugove Walter Nyika












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More and Better Food

Contents

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Bishop William Mchombo sowed the idea when he asked Anne Bayley to talk about 'food security' for people living with HIV in Eastern Zambia, soon after Josie Tengatenga had introduced the authors to each other in 2008. But Bishop Christopher Boyle and James Mnelemba made an earlier start in 2003, when they set up the Chiwowa Chisala demonstration garden in Northern Malawi. Earlier still, in 1992, Anne Bayley had met John Wibberley of RURCON, and began to receive bulletins from his organisation with the key message that "farming can change". Meanwhile, in 1996, John Turner and John Wilson introduced Mugove Walter Nyika to permaculture. In the decade that followed, the Schools and Colleges Permaculture (SCOPE) Programme became part of the Ministry of Education in Zimbabwe and the Rescope Programme was founded as a regional schools permaculture initiative for East and Southern Africa.

In 2002 June Walker introduced Anne Bayley to the concepts and practice of permaculture at her home in Malawi, and has continued informal instruction - and hospitality - ever since. June designed and produced fourteen posters on permaculture, 'by women and for women', while teaching Sarah Beare how to illustrate them. The text of these posters was translated into Chewa in 2009 and became the starting point for *More and Better Food*. We thank Stacia and Kristof Nordin for nutritional material from their book, *Food and Nutrition Security: Growing and Eating More Using Less*, especially for the 'better meal' concept.

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Anne Bayley Mugove Walter Nyika

Preface

About the *Called to Care* toolkit

In many countries throughout the world, churches and individual Christians are responding to Christ's call to 'love your neighbour as yourself' by undertaking community-based activities to address the massive challenges of HIV and AIDS.

In sub-Saharan Africa, churches have often been in the forefront of efforts to reduce the impact of HIV and AIDS. They are demonstrating, in many practical ways, that they feel 'called to care' for those who are infected or affected by the AIDS epidemic. They have, for example, pioneered ways of making basic health care available to people living with HIV, and of providing children orphaned by AIDS with education, social support and health care.

Churches have been less effective, however, in addressing problems such as HIV prevention, HIV-related stigma, shame and discrimination, and cultural and gender issues associated with high-risk sexual behaviour. Denial of the reality of HIV and AIDS within church communities is also widespread. Moreover, although sex is the main means of HIV transmission in most countries, it is rarely discussed in church circles in an open, non-judgemental way.

Yet churches and other faith-based organisations have enormous potential for empowering individuals and communities with the knowledge, attitudes, skills and strategies they need to deal with issues related to sex, gender and AIDS. Moreover, growing numbers of church leaders have become aware of the need for a much more concerted effort to address the issues raised by the AIDS epidemic in a broader, more comprehensive manner.

In order to support this effort, the Strategies for Hope Trust has developed the *Called to Care* toolkit. This consists of a set of practical, action-oriented handbooks on issues related to HIV and AIDS for churches and communities, especially in sub-Saharan Africa. The *Called to Care* handbooks are designed to enable pastors, priests, religious sisters and brothers, lay church leaders, and their congregations and communities to:

- Reflect on and understand the spiritual, theological, ethical, health, social and practical implications of the AIDS epidemic and the Christian call to respond with compassion.
- Overcome the stigma, silence, discrimination, denial, fear and inertia that inhibit church and community action to address AIDS-related issues more effectively.
- Guide their congregations and communities through a process of learning and change, leading to practical, church-based actions to help individuals, families and communities reduce the spread of HIV and mitigate the impact of AIDS.

The *Called to Care* toolkit consists of practical, user-friendly handbooks designed for use with churches and communities at different levels of awareness and experience in relation to the AIDS epidemic. This book, No. 9 in the toolkit, focuses on household food security in the context of climate change and the AIDS epidemic.

One more *Called to Care* handbook is currently being developed. This will be on the topic of parenting.

The *Called to Care* project is being implemented through a process of international, ecumenical collaboration between churches, faith-based organisations, international church organisations and networks, publishers, distributors and other partners.

We invite you to participate in *Called to Care*, not only by using the handbooks in the toolkit in your congregation or community, but also by writing to us about your experiences, which we would be pleased to post on the Strategies for Hope website: www.stratshope.org.

Yours in faith and solidarity,

Glen Williams
Series Editor, Strategies for Hope Trust

Called to Care partners

The *Called to Care* toolkit is published and distributed in partnership with the following international, national and local organisations:

Africa Christian Textbooks

African Christian Initiation Programme (ACIP)

African Holy Zionist Church

African Network of Religious Leaders living with or personally affected by HIV and AIDS (ANERELA+)

Anglican Diocese of Eastern Zambia

Anglican Diocese of Southern Malawi

Balm in Gilead

CAFOD

Catholic AIDS Action

Christadelphian Meal-a-Day Fund

Christian Aid

Christian AIDS Bureau for Southern Africa

Christian AIDS Network

Christian Connections for International Health

Christian Council of Ghana

Christian Literature Fund

Churches Helping Churches

Council of Anglican Provinces of Africa

Ecumenical HIV and AIDS Initiative in Africa (EHAIA), World Council of Churches

Eldo-GADNet

Evangelical-Lutheran Church in Württemberg

Evangelical-Lutheran Church in Hessen and Nassau

Family Health International

German Institute for Medical Mission (DIFAEM)

Interchurch Organisation for Development Cooperation (ICCO)

International Christian Medical and Dental Association

International Network of Religious Leaders living with or personally affected by HIV and AIDS (INERELA+)

Kachere Press

Kerk in Actie

Khulakahle Child Counselling and Training Forum

Lutheran World Federation

Malawi Association for Christian Support

Masangane

Maurice and Hilda Laing Charitable Trust

Micah Initiative

Misereor

missio Aachen

Organisation of African Instituted Churches

Rescope Programme

Serving in Mission

Tabernacle Sifa

Tearfund

United Society for the Propagation of the Gospel

Upendo AIDS Centre

World Vision International.

Foreword

In all cultures, people celebrate by enjoying good food together. In the New Testament, fellowship with Jesus is often associated with meals - from a wedding at Cana in Galilee to breakfast on the lakeshore after his resurrection. Food matters, to us and to God! Yet few churches emphasise the importance of food - except for celebrations of the Lord's Supper - and even fewer pay much attention to soil and to where or how we produce food.

The world's population has doubled in under 40 years. To meet the demand for more food, an industrial model of food production was devised, based on chemical fertilisers and pesticides, hybrid seeds and irrigation. This increased crop yields, but at the expense of the health of the soil, water, plant and animal resources. Many small farmers became trapped in a vicious circle of debt and dependence on expensive agricultural inputs.

At the same time, growth in the use of fossil fuels greatly increased the output of carbon dioxide into the atmosphere, the main cause of global warming or 'climate change', which makes farming more difficult.

Since the 1980s, much international attention has focused on the AIDS pandemic. In 1996 antiretroviral treatment (ART) made HIV infection a manageable, chronic disease in the industrial world, but it was not widely available in Africa until 2004. Good nutrition is necessary to maximise the health benefits of ART and to minimise side-effects. Yet most people with HIV and their families in sub-Saharan Africa live in a state of food and nutrition insecurity. Donated 'food supplements' are an inadequate, short-term response to hunger and under-nutrition as they encourage dependency. Instead we need to help small-scale farmers - including people with only small plots in cities - to grow more of their own food, in sustainable ways.

In 2008 a study by the United Nations Environment Programme (UNEP) found that organic approaches to small-scale farming in sub-Saharan Africa, as described in this book, consistently increase food production, and promote bio-diversity and resilience to environmental stress. They also build up natural resources, thus strengthening communities and reducing poverty. In most African countries, however, the spread of these successful models is hindered by obstructive or uninformed government policies, and by lack of investment in research into sustainable farming.

Many farmers who use organic methods are women, yet women are under-valued as food producers and are often prevented - either by the law or by culture - from owning the land from which they feed their families. Freeing women from these constraints would help to bring about the profound changes in values, attitudes and practices that we so urgently need.

This book aims to encourage churches and other communities to end food and nutrition insecurity by promoting a mindset that respects the gifts and processes of creation. Our goal is to discover the rich abundance of life in the 'new earth' of God's kingdom.

Anne Bayley
Mugove Walter Nyika

Definitions of key terms used in this book

Agro-forestry is the use of trees in farming. The trees used are selected for their beneficial functions such as producing fodder, fixing nitrogen and fire resistance.

Conservation farming/agriculture is a technique that is used to improve soil health through minimum disturbance of the soil, maintenance of soil cover, mixed cropping, regular rotation of crops and the application of organic manure.

Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their food preferences and dietary needs for an active and healthy life.

Food sovereignty exists when people have full control of their food in all its diversity, its production and distribution. It is achieved when farmers control the political and socio-economic factors that influence access to food.

Genetically Modified Organisms (GMOs) – a new type of organism (plant or animal) that has been produced by changing the organism's basic genetic structure (e.g. inserting a gene from a pig into a chicken).

Organic farming is the use of natural or living inputs in farming. In the western world, it is largely associated with a labelling and certification system that is meant to reassure consumers that any produce that is labelled 'organic' has been produced under a particular set of standards. The standards are agreed upon between the farmer and a certifying body such as the Soil Association of Britain. In many African countries there are many farmers whose produce is organic by default, i.e. the farmers are not certified but they have never used industrial chemical inputs in their farming.

Permaculture is a design system for creating sustainable human environments. When applied to agriculture, it is a design framework that farmers can use to mimic nature and to allow natural processes to play their roles in the farming process. A wide range of environmentally friendly techniques such as agro-forestry and intercropping are available to the permaculture farmer for use in building agro-ecological land-use systems that are in harmony with nature.

Small holder farmers or farming families in Africa are small-scale farmers who live and work on land that is usually owned by the state. Part of the land (especially the arable land) is allocated to individual families, while the rest is farmed communally. The arable land given to each family rarely exceeds 50 hectares but is typically much smaller, ranging from 0.5 to 5 hectares depending on the population densities. An important feature of farming families is that their lives are closely tied to the land which is their source of food and livelihood.

Sustainable agriculture exists when farming is done in such a way that it does not compromise the ability of future generations to produce their own food. Farmers in sustainable agriculture keep all the natural resources such as the land, plants and animals healthy and the water and air clean, so that all these resources remain productive for present and future generations. Sustainable agriculture ensures the maintenance of ecological life support and biological diversity, and good use of resources.

Acronyms

AIDS - Acquired Immune Deficiency Syndrome
ART - Antiretroviral Therapy
HIV - Human Immunodeficiency Virus
VCT - Voluntary Counselling and Testing
GMO - Genetically Modified Organism

Introduction

WHO this book is for.

WHY this book was written.

WHAT this book is about.

WHERE and **WHEN** this book can be used.

HOW this book can be used most effectively.

Please read these introductory pages carefully before you begin to use the sections and modules which make up this training manual.

Who?

This book is for many different kinds of **hungry people**, including those who already grow some food, but want to grow more, with less effort and fewer inputs. It is also for those who have 'enough to eat', but are concerned about costs and the nutritional value of their meals. It isn't good enough to have food on the table if costs to the pocket or to the environment are too high. People who don't grow anything at present - but would like to begin - should be interested, too, as it is empowering to grow some of your own food.

It is especially for **women** who want to give their families better meals. Women care for children and sick relatives, do paid work or trade, cook, clean, sweep, wash clothes, collect water and firewood - as well as growing crops. No wonder many women have no spare time or energy! But it **is** possible to reduce 'women's work' if they stop digging and sweeping, do less weeding and learn to cook food more efficiently on stoves that use less fuel.

This book is for **people living with HIV** who may or may not be taking antiretroviral treatment (ART). They are told to eat

Is this daily sweeping useful?

'nutritious meals' to strengthen the immune system and enable the drugs to work better. But where would the extra food come from? If food is donated, it is often imported and available only for a short time, so encouraging dependency - instead of self-reliance and local food production.

Some **families and communities** understand that they must grow more food - because there is no-one else to do it - but feel disheartened and helpless. Why? Because for over 30 years their fields and gardens have produced smaller and smaller yields and their soil seems 'exhausted'. This book is for such disheartened people, too, because their land can yield abundantly again.

It is also for **schools** that are concerned about the productivity of their land and the life skills that children need to learn. Most **young people** have given up on 'traditional' farming because it is hard work but offers no status and few rewards. But many young people can't find jobs or get into further education. They are bored and resent being treated as 'nobodies' in their communities.

We challenge young people to become pioneer **farmers-for-the-future**, to introduce new methods and to show that this essential work can provide both a good income and opportunities for development and specialisation.

It is also for people outside ordinary communities - in **prisons** or **refugee camps**. They, too, can improve their food supply now, while preparing for a better life later. Nelson Mandela is their role model - he grew food during his years in prison!

This book is for anyone who worries about late rains, warmer winters and other signs of climate change in Africa. Their fears that global warming will worsen hunger and poverty are well-justified - and serious.

We write for **full-time small farmers**, **farming families** with one or two hectares of land - and also for **part-time gardeners** in cities who grow vegetables or keep chickens in back yards. We refer to anyone who grows food, on whatever scale, small or large, whole-time or part-time, simply as a 'farmer'.

Why?

Food and nutrition insecurity are already serious problems that are getting worse each year. Here are some reasons:

1. Populations in Africa and the world are too large for present methods of food production and distribution. One billion of the 6.9 billion people alive today don't have enough to eat. Millions of others are not 'hungry' but (without knowing it) they don't eat the right mixture of foods for good health and strong immune systems - so they suffer from 'nutrition insecurity'. From now on we ought to match family sizes to our ability to grow food, and learn to choose and grow foods to make 'better meals' that will lead to better health.

2. Most land that can be farmed easily is already in use, so we need to increase yields per hectare and to find unused places to plant crops. The food that is grown is not fairly distributed, and some is wasted through poor storage or because farmers can't find good markets. Storage, preservation and distribution of food need more attention, too.

3. For more than 50 years, too many trees have been cut down, leading to erosion, failure of heavy rain to soak into soil, and a low water table causing springs, wells and even rivers to dry up. We are losing both the products of trees (wood, foods, fuel, medicines, leaf litter) and their important services - storage of water, use of carbon dioxide, shade and shelter from wind.

4. When world population doubled between 1960 and 2000, food production doubled too, but with serious costs to soil and human health. Although chemical fertilisers and pesticides, hybrid seeds, and irrigation produced more food in the

short term, natural soil productivity decreased, while water was used wastefully and was contaminated by chemicals. New studies from around the world show that using chemical fertilisers actually makes soils less productive. Human health is increasingly at risk from pesticides and reduced nutrients in intensively farmed food.

5. Farmers have low social status in many communities, especially in the eyes of young people, but most churches don't challenge this mistaken attitude and many farmers don't question it either.

For all these reasons, hunger and poverty are increasing, especially since AIDS started in the early 1980s. Sick people have less energy and time for farming. If both parents die, children may not learn farming skills and may lose family land. Old people have to care for themselves and often for grandchildren orphaned by AIDS as well. Yet grandparents are important people, because they can identify nutritious 'famine foods' and resources for farming today, based on past experience.

We should not wait for governments or NGOs to act: in any community, ordinary people can use the resources they already have to improve their lives - if they are willing to change their attitudes and farming methods.

What?

This book is about the central place of growing and eating food in Christian discipleship, God's concern for our physical as well as our spiritual well-being, and Jesus Christ's challenge to the low self-image that many farmers share with their neighbours. We describe how to make better use of undervalued resources that nourish soil - water, trees, nitrogen-fixing plants, animals and 'rubbish'. Without productive soil, human societies fall sick, fight each other for food or water and die. This book is about hope for the immediate future and hope for happier lives for our children and grandchildren.

Where and when?

Use this book with any group that cares about food insecurity and health, in town or country. For example:

- faith communities worried about poverty and hunger
- people living 'positively' with HIV
- farmers dissatisfied with their working lives and outputs
- women's and men's groups
- unemployed young people who feel left out of community life
- people looking for ways to improve their incomes long-term
- literacy classes wanting to study new material
- school clubs and other groups of children and teachers.

Hold meetings in a church or community hall, at a school, or in the open. Outdoor space is needed for some activities, and soil soft enough to hoe for some demonstrations. Meet at times when there are no urgent tasks in gardens, soon after the harvest, and finish before the rains start.

How?

This book has an introduction and two parts. **Part One**, which consists of eight sections, helps leaders to prepare for later community meetings.

Part Two, which consists of eight modules, describes how to organise eight participatory meetings on farming, food and nutrition security, for 15 to 40 people in their own communities. If groups are mainly men or mainly women, or of similar ages or interests, arrange at least one meeting where ideas are shared by a wider group of people.

Each module lasts about three and-a-half hours, half a day of a full-time course, or

Essential equipment and materials should be available in any village or township:

- ✓ traditional hand-hoe
- ✓ sharp knife and a shovel
- ✓ strong string
- ✓ 2 metal or plastic buckets
- ✓ 9 to 12 straight poles, each about 2 metres long
- ✓ cooking pot and frying pan
- ✓ 3 or 4 empty plastic and glass bottles
- ✓ tape or metre measure
- ✓ plastic or metal plates for participants
- ✓ plastic or metal mugs for participants
- ✓ deep cardboard boxes or local baskets
- ✓ half-bricks or similar-size stones
- ✓ empty maize-meal sacks
- ✓ matches
- ✓ seeds and seedlings of local plants
- ✓ long nails and a hammer
- ✓ water
- ✓ watering can
- ✓ dry grass, banana leaves, sand
- ✓ newspaper
- ✓ soil samples: sandy, loam, silt, clay
- ✓ samples of local foods and nitrogen-fixing plants that do well locally
- ✓ fuel-efficient stove of a pattern made locally

✓ You will also need workshop materials - flip charts with marker pens and blu-tack, or alternatively chalk boards with chalk.

an afternoon at weekends. Some activities can be done either in small groups, or by individuals as 'homework' between meetings. Demonstrations are essential and new skills need to be practised repeatedly - until they become habits. A few experienced farmers are needed to help out in Modules E to H.

We suggest starting with a short intensive 'course', over one weekend, using the first four modules of Part Two. The rest of Part Two is better taken more slowly (one meeting every two to four weeks), so that farmers can try out new methods, see results and ask questions based on experience.

We focus attention on Biblical affirmations of the value of food and farming, so each session starts with worship and meditation. At present there are few hymns or songs celebrating food and farming in African songbooks, so challenge participants to compose songs and dances to fill this gap.

Listening to personal stories helps people to change their own behaviour, so one leader should have personal experience of 'agricultural behaviour change'. For example, he or she uses legumes instead of chemical fertiliser, or grows unusual crops, and enjoys 'better meals' and improved soil productivity. **Appendix i** lists selected organisations which can help readers to find experienced people to provide training in specialist farming skills (Module H).

Finally, we aim to change how people think about food and to show that 'better meals' taste good, so eating 'better meals and snacks' must form part of group meetings. In our experience, volunteer cooks, or an ordinary restaurant, given good local ingredients and clear instructions, can produce 'better meals' that everyone eats and enjoys. There should be enough food left over for the cooks to eat, so that they, too, benefit from the experience!

Part One

Eight sections to help leaders prepare for community meetings

Section 1:

Food and nutrition insecurity

AIDS is a huge problem, but many Africans think that hunger and poverty are even more important than AIDS for their families and communities. Actually all three problems are linked, so it is difficult to deal with one if the others are ignored.

Everyone living with HIV - especially people who are taking antiretroviral drugs - is interested in food. The Food and Agriculture Organisation (FAO) and UNAIDS agree that nutrition is important in managing AIDS, but they don't answer a vital question: "Where is this food - which everyone needs for life and health - to come from?"

This is a key question for all Christians. The Bible begins and ends in a forest-garden, and Jesus told more parables about farmers than any other group of people. Yet many Christians don't see farming as part of discipleship. When Jesus said "the kingdom of heaven is like this", he often used a story about farming. He was a carpenter, but he didn't tell a single parable about carpenters. Instead, farmers, vine-growers, shepherds and landowners featured in most of his stories.

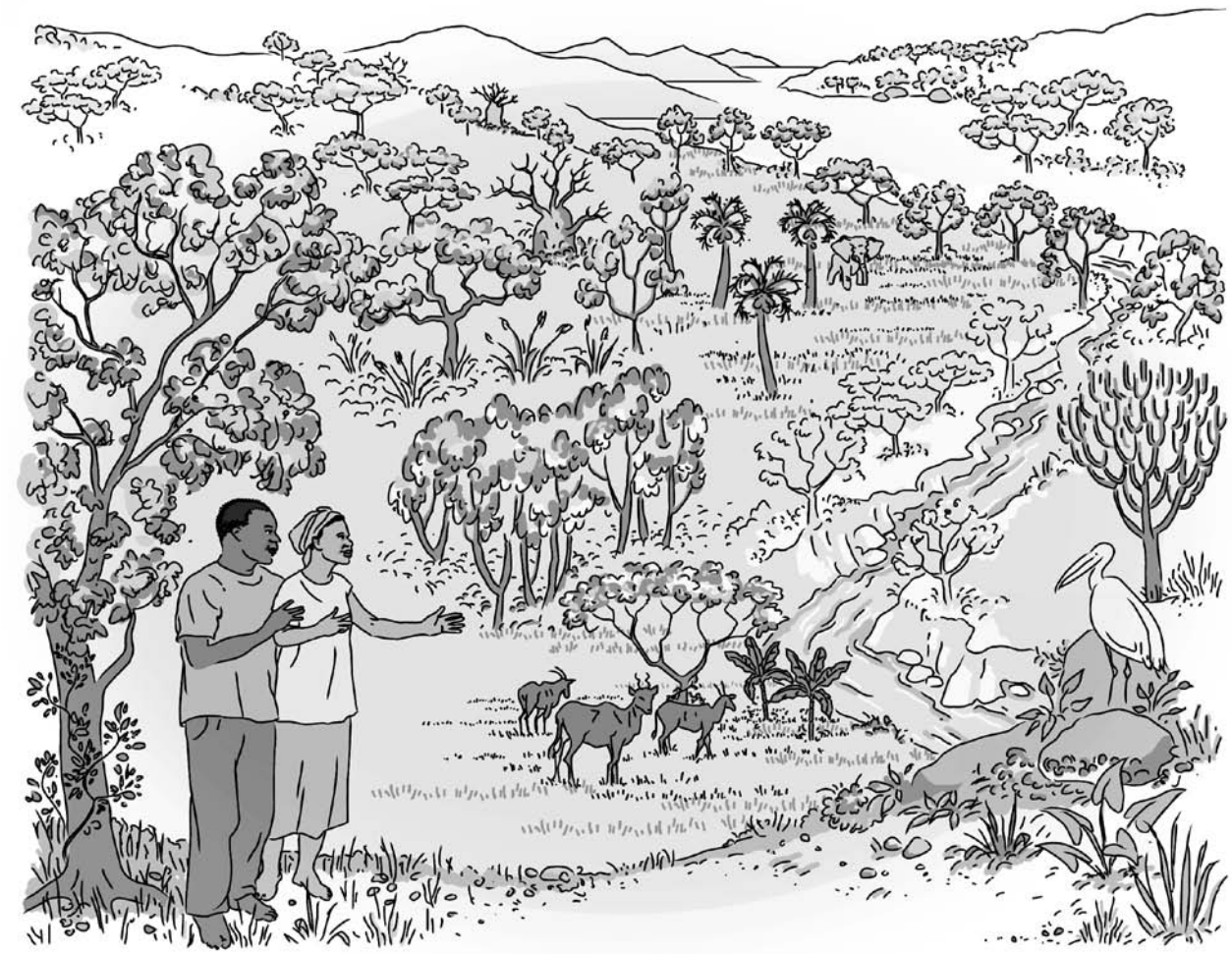
Jesus ate and drank with such enjoyment that he was called a "glutton and a drunkard". He ate in friends' homes, invited himself to meals with people he had just met, shared food on hillsides and by the lake - meals important enough to be recorded in the Gospels. Jesus used meals to make friends with people who were 'outsiders': men and women stigmatised by society. Do you remember, only a few years ago, how difficult it was to eat with people who might have AIDS? Jesus often ate with people who were feared and avoided, though for different reasons. Food is such an important part of our culture that we want to share it with friends, and use it to welcome strangers.

God values material things

Many people, including some Christians, think that God is interested only in 'spiritual' life, but not in material things. But the Gospels show that God does value 'matter': water, soil, plants, animals, human bodies and the things people make.

God, too, is a 'maker', and Genesis offers two different stories about creation. Neither story describes what a film of how the world began would have shown. But both stories express, in picture form, important truths about God, human beings and what the world is like.

The world had a beginning when time, too, began. How everything came to exist was not an accident, but there was a creator, whom we name 'God'. Creation shows great variety, or diversity, yet everything living or non-living is part of a single whole, forming an orderly pattern. But this pattern is interrupted by unexpected surprises. Human consciousness and speech are two such surprises - our ability to think about what we see and to imagine what we can't see - and to talk to one another about both. We are moved by beauty, for reasons we can't



"God saw everything that he had made, and indeed, it was very good."

explain, and we can 'go out of ourselves' in love or unselfish care for other people. Human beings are spiritual and material, both at the same time.

Genesis tells us that God delights in creation: "God saw everything that he had made, and indeed, it was very good" (Genesis 1:31). Genesis says that people are made in God's image, according to God's likeness. That insight was confirmed 2000 years ago, when God entered creation as Jesus of Nazareth, who lived a fully human life, from ordinary birth to violent death.

Like everyone, Jesus needed food for life and health, but he also used food to represent himself on the night before he died, when he had supper with his friends. Then, "he took a loaf of bread, and when he had given thanks he broke it and gave it to them, saying, 'This is my body, which is given for you. Do this in remembrance of me'" (Luke 22:19). Again and again, the Bible encourages us to take food - and the duty to grow it - seriously.

Life today

Neither development nor 'aid' has ended poverty or hunger, which are linked together and getting worse. People look back 40 or 50 years to times when crops were more abundant and easier to grow, and when trees still covered hillsides. But conditions and landscapes have changed gradually, so we don't realise how much has changed.

People suggest many reasons why the land produces less today:

- the soil is exhausted
- we have the same amount of land, but more people to feed
- we can't afford seeds and fertiliser - the costs are too high
- young people aren't interested in farming - they prefer office jobs
- the rainy seasons are changing
- people taking antiretroviral therapy are hungry, but are not strong enough to farm in the old ways
- too many people die young and there are too many orphans
- governments don't help enough: there are few agricultural extension officers for advice, and insufficient subsidised 'inputs'.

All these reasons may be true - but they are not an excuse for despair, rather a sign that we should look at our lives differently. Could we use our existing God-given resources more effectively? But first, we need to look at two new problems that affect the whole world: 'climate change' and the shortage of oil for cheap energy.

Climate change and fossil fuels

The world is getting warmer. Snow on Mt Kilimanjaro is melting and will soon be gone, while glaciers and ice around the north and south poles are disappearing. Melting ice is causing sea levels to rise; small islands are disappearing into the sea and low-lying coastlines will soon follow. Weather is becoming more extreme, with destructive storms over land and sea. In Africa winters are warmer, rainy seasons are less reliable, and floods and droughts happen more often. Farming is more difficult than it was.

Fossil fuel supplies of oil, natural gas and coal are decreasing, so we need alternative sources of energy. Yet we behave as though oil supplies will go on forever - to transport us in cars, coaches, tractors and planes, and to make fertilisers, pesticides, plastics and medicines, and to power our TV sets, computers and refrigerators. In countries with no hydro-electric power, coal and other fossil fuels are used to generate electricity.

Many decision-makers don't yet understand that climate change and shrinking oil supplies interact. But Africans wonder how 'global warming' and 'oil running out' will influence the hunger and poverty they suffer already. Will poverty and hunger increase? Will ordinary people lose their chance to share the more abundant food, better health and higher standards of living that rich countries enjoy now?

Climate change is happening much faster than anyone expected. Scientists agree that we have less than 10 years, from 2011, to radically change human behaviour: what we eat, how we grow food, how we use energy and water, and how we relate to other people.

Faced with AIDS, poverty and hunger on an African scale, with climate change making farming more difficult, how should we respond? There are only three possibilities:

- **denial** – "it isn't happening, so we won't think about it!"
- **despair** – "the problems are so huge that no-one can do anything"
- **determined action** - a new look at what we actually have, with a willingness to change behaviour to make better use of our resources.

We choose the last possibility, determined action, because Christians are called to repentance and transformation. Repentance means 'changing direction' to accept hope and new life from God, who doesn't abandon his creation. God wants us to live more abundant lives!

There are only three possibilities: denial, despair or determined action.

Ourselves as farmers

Many people, including some farmers, think of farming as low-status work, less important than teaching, health care, office jobs or government. "Farming is only fit for peasants!" is a common attitude. But if farmers are not respected, is it any wonder that few young people want to join them? Farmers are essential workers as much as - if not more than - other professionals. Over the next 10 years, opportunities for young people on the land will grow: we expect farming to become respected, higher status work.

High-input, large scale industrial farming has been respected, and supported, for 50 years. Most advances leading to a 'green revolution' in the twentieth century were made on industrial farms, but small-scale farmers rarely benefited. However, a study published in February 2010 by the International Livestock Research Institute, the International Water Management Institute, the Consultative Group on International Agricultural Research and the World Bank declared that "smallholder farmers hold the key to global food security". The study continued:

"Smallholder mixed farmers, particularly in Africa and Asia, have been overlooked by donors and policy makers because they typically cultivate small plots of land, where they grow modest amounts of staple crops such as rice and maize while also rearing a few cows, goats or chickens. Yet collectively these farmers are feeding most of the world's one billion poor people and they are the key to any efforts to intensify production in the developing world."

Indeed, already some small-scale farmers have made huge strides in farming, food and nutrition security, with little or no external input. For example, in the Chikukwa community in the Chimanimani district of eastern Zimbabwe, 8,000 villagers have not only achieved food self-sufficiency, but have restored to life springs that had dried up long before, following decades of environmental degradation caused by conventional farming.

Research conducted by the UN Environment Programme (UNEP) in 24 African countries concluded that small-scale organic farming can not only outperform chemical-intensive, conventional farming, but it can do so without environmental damage. In 114 projects where organic farming was practised, yields more than doubled. Moreover, organic farming improved soil productivity, water supplies and flood control, while reducing soil erosion. Soils were healthier and better able to retain water and sustain plant growth, resulting in higher yields. (UNEP, 'Organic Agriculture and Food Security in Africa', 2008)

Section 2:

Seeing resources with new eyes

Poor harvests, poverty, AIDS, climate change and failing oil supplies are big challenges. But these challenges offer us a chance to move from 'input-intensive' ways of living and farming, to '**knowledge-intensive**' ways that will give farmers more control over their own lives.

Farmers already have most of the resources they need, close to home, but often don't make full use of them. We can learn to do so by looking at how natural resources and cycles work together in natural environments such as forests, river banks and plains. Forests flourish without any fertilisers or pesticides! We ask you to look with 'new eyes' at familiar resources: energy from the sun, soil, rain, trees, animals and 'wastes' which most people throw away unused.

In a healthy environment, different plants, trees, insects and animals live together in a sustainable and interdependent way. Living things take whatever they need from air, water and soil, plus energy from the sun, and supply one anothers' needs, without causing harm. If an eco-system becomes unhealthy, we find fewer different creatures living in it. Most eco-systems are natural, but people can design land-use systems that support co-operation - if they are humble and careful.

Value these resources - that we all have - as you value your own hands. Think of soil as the thumb, water and energy from the sun as the index and middle fingers, and plants and animals as the ring and little fingers. Remember that fingers and thumb need to work together to grip tools, plant seeds and harvest crops!'

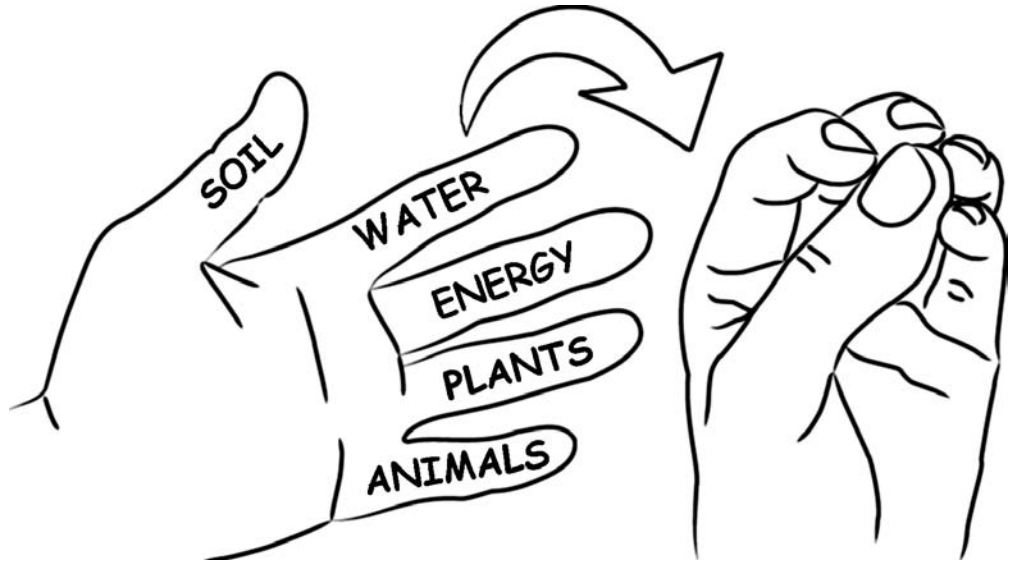


Figure 1: Farms need all these things - together.

Energy from the sun

Plants use energy from the sun directly to make food (carbohydrates) for their own use. Plant-eating animals feed on the plants and meat-eating animals feed on the plant eaters - and humans eat all three. Plants are essential to all life on earth, because no animals have chlorophyll, the green pigment found in leaves, which is needed to turn solar energy and carbon dioxide into carbohydrates. Without plants, there would be no human or animal life.

People use energy from the sun **directly** for warmth, but also to:

- heat water for baths or showers
- cook, using solar cookers
- make electricity with solar photovoltaic panels.

Solar energy is power for the future, because the sun shines everywhere. When enough people want them, solar panels will become cheaper.

We use energy from the sun **indirectly** whenever we use other renewable resources, such as wind (windmills or turbines) and water (hydro-electric power stations) - also at every meal.

Fuel oil, natural gas and coal are **non-renewable sources of energy** because they are not replaced as they are used. All three were formed from dead plants and animals that received energy from the sun millions of years ago, so they are called **fossil fuels**. When these resources finish, probably while our children are still alive, they will be gone forever.

Breathing and burning produce a gas called carbon dioxide. If there are plenty of trees and plants, most carbon dioxide is used to make energy-food and the rest rises into the atmosphere. With other gases, it acts like a light blanket or greenhouse, to stop some heat from the sun escaping into space. This **'greenhouse effect'** keeps temperatures on earth safe and comfortable, otherwise days would be too hot and nights too cold for life.

But for over 100 years people have used more and more fossil fuels and have cut down large numbers of trees. As a result, there is now too much carbon dioxide in the atmosphere, making a heavy blanket that stops heat from the sun escaping safely into space. This increased 'greenhouse effect' is causing **'climate change'** or 'global warming' - two names for the same process.

Rain and the water cycle

Plants, animals and people need water for life. Rain falls on the surfaces of rivers and lakes, or sinks into the soil, where it is stored as ground water. Ground water increases each rainy season, when the **water table** rises nearer to the soil surface. In dry seasons the water table falls - and with it, levels in wells - and springs and rivers may dry up.

Water returns to clouds through **transpiration**, when plants release moisture into air, and by **evaporation**, as heat from the sun raises water from the sea, soil, rivers and lakes. Moisture in air rises, condenses to form clouds and falls as rain or snow, to renew the **water cycle**.

The challenge for farmers is to keep every drop of rain that reaches their land **on** their land, for crops, animals and people, without letting any be wasted as run-off. But we can learn to manage water, especially on slopes, so that more rain sinks into the soil and stays there, for plants to use.

Soil, land and the nutrient cycle

Soil is a mixture of powdered rock, water, air, living and dead plants and animals - and small spaces or pores. The small spaces are as important as the rooms in a house: we

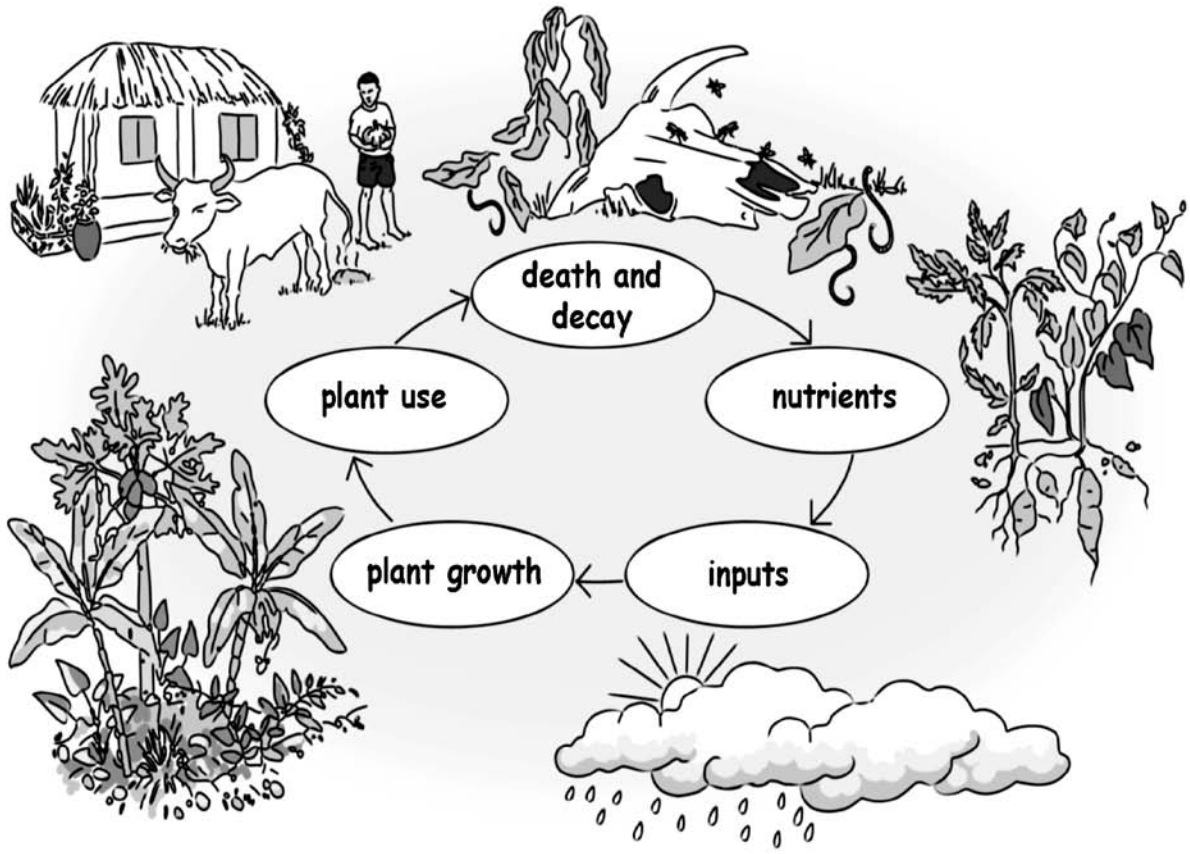


Figure 2: The nutrient cycle.

should not disturb them by ploughing or 'ridging'. It takes a long time to form soil, which is fragile and easily damaged by lack of care. Healthy soil is full of small living animals, some visible - like worms - but most too small to see, except with a microscope. These living creatures recycle dead plants and animals, by decomposition, to feed the soil for the benefit of plants and animals. Life and growth depend on death and decomposition. The **nutrient cycle** depends on this 'livestock'. If plants are burned, food to nourish soil is lost. Productivity that lasts forever depends on returning all natural waste materials, including animal and human wastes (suitably prepared), to the soil (see Figure 2 above).

People overlook land that could be used to grow food. Many homes, schools and churches in Africa are surrounded by hard, bare soil which is swept everyday to keep it 'clean', but where nothing grows. Women who are not outside with a broom at dawn are seen as lazy! But what are they doing? Sweeping away topsoil, coughing in the dust and wasting energy needed for essential work! Look at the bottom of walls and steps and you will see that foundations are exposed for a few inches. Yet many people turn these wasted spaces into productive gardens; you can do so too.

Trees and other plants

Trees and other plants take in carbon dioxide (as they use the sun to make energy-food) and give out oxygen, which is essential for human and animal life. Trees are the best

way we know to remove carbon dioxide from air, so it is important to look after them and to plant many more, to reduce the dangers of global warming.

Trees also help the water cycle, by holding rain on slopes and increasing the water stored in the soil. We value outputs from trees - wood for houses, furniture, fences and fuel; fruits, roots, bark and leaves for medicines and leaves for compost. But the services which trees provide through the water cycle and protection from wind and heat are equally important. Some trees and plants also transfer nitrogen from the air into the soil. These 'specialist' plants are called **legumes** and can be recognised easily because their seeds are enclosed in pods.

When many trees are cut down for fuel or to burn bricks, forests disappear, deserts expand and land available to grow food shrinks. Today we need to reverse this desert-making process. **Re-forestation** takes time, but it can be done. We start by managing rain on slopes, to keep grasses and other plants that are growing there moist, which encourages soil 'livestock' to return. Then plants that need more water reappear - first shrubs, later small trees and finally large trees - or we can plant the trees ourselves.

Natural eco-systems don't grow only one kind of plant, such as maize or cassava. Look at a forest: there are large trees, creepers, smaller trees, shrubs, small plants and grasses close to the ground - all growing together. Compared with rows of maize, forests are wildly untidy, but very productive! If you ask older people how they grew food 40 years ago, they will tell you that they planted maize, beans and pumpkins all together, because "they grew better that way".

Using waste materials

Used water should not be thrown away but re-used to grow vegetables and herbs near the house.

Other wastes are of two kinds:

- materials that cannot decompose, such as glass and plastics
- materials that do decompose, such as plants and paper or fabrics that are made from plants, wood, ash, and human and animal wastes.

We need to separate these two kinds of waste, because they are re-used in different ways. Later we describe how to use glass and plastic 'rubbish' and how to turn anything that can decompose into compost, which is food for the soil.

Section 3:

Food, variety and health

We eat to feel satisfied, for energy, pleasure and celebration. But many people confuse feeling 'full' with being truly satisfied. They don't understand that comfortably full stomachs may not contain all the minerals and vitamins needed for good health and strong immune systems. This is particularly important for people living with HIV (whether or not they are on ART) and for children. Poorly nourished adults and children get ill more often than those who eat a good diet, and many children don't eat enough protein and energy foods to grow to full height and strength.

What does the word 'food' mean to you?

'Food' has different meanings, depending on where people live and which foods are available. What we identify as 'food' is based mainly on what we learned to eat as children and on local 'custom'. For example, for Malawians or Zambians, 'food' means maize porridge or nsima. It's the same in Kenya and Tanzania, except that the maize porridge is called 'ugali'. If a Zambian doesn't eat nsima but potatoes or rice, he may say "I haven't eaten".

Many people don't think that other things on their plates, such as vegetables, are truly 'food'. Is this right? Some foods, especially fruits, are thought of as "only for children or sick people". Is this correct? Other foods (e.g. hamburgers and other 'fast foods') have high status, as rich people eat them, while cheaper foods are despised as "only for peasants". Are these judgements wise?

A better definition of 'food' is "anything that human beings eat which gives energy for life and work, and contributes to growth and good health".

Healthy diets

Our diet, or what we are used to eating, is a central part of 'our' way of life. But most people, especially those living with HIV, could enjoy better health if they questioned traditions about 'food' that are taken for granted.

Every diet is based on staple foods that provide energy for work. This staple is the main item on any plate. Rice, maize, wheat, millet, cassava, matoke, sorghum, yams, plantains and potatoes are common staple foods. These crops store well and yield plenty of **carbohydrate**. They don't, however, contain fat and most are not good sources of vitamins and minerals, which are found mainly in fruits, vegetables and fats. If any society relies too heavily on one staple food, then if that one crop fails, everyone goes hungry.

Different staple foods have different needs for good growth. It doesn't make sense to grow only crops introduced from other countries (such as maize) if growing conditions are difficult. It is wiser to grow - and eat - a mixture of mainly local staple crops (for example millet, cassava and sorghum), so that if one crop fails, there is still enough high-energy food to avoid hunger.

Vital nutrients

As well as energy for work, human beings must have **protein** for growth and to repair worn or damaged parts of their bodies. Children and people who are recovering their health (for example when starting

ART) have the greatest need for protein. Many plants - especially beans, peas, soya, groundnuts and other nuts - are excellent sources of protein. These foods also provide carbohydrates for energy and fibre for good intestinal function.

Animal products such as fish, meat, eggs, insects, mice, birds and milk are alternative sources of protein but are not essential for health, as millions of healthy people who eat only plant foods demonstrate. Meat from large animals and foods based on milk taste good and are popular as 'high-status' foods, but have disadvantages in a world where health and climate change are concerns because they:

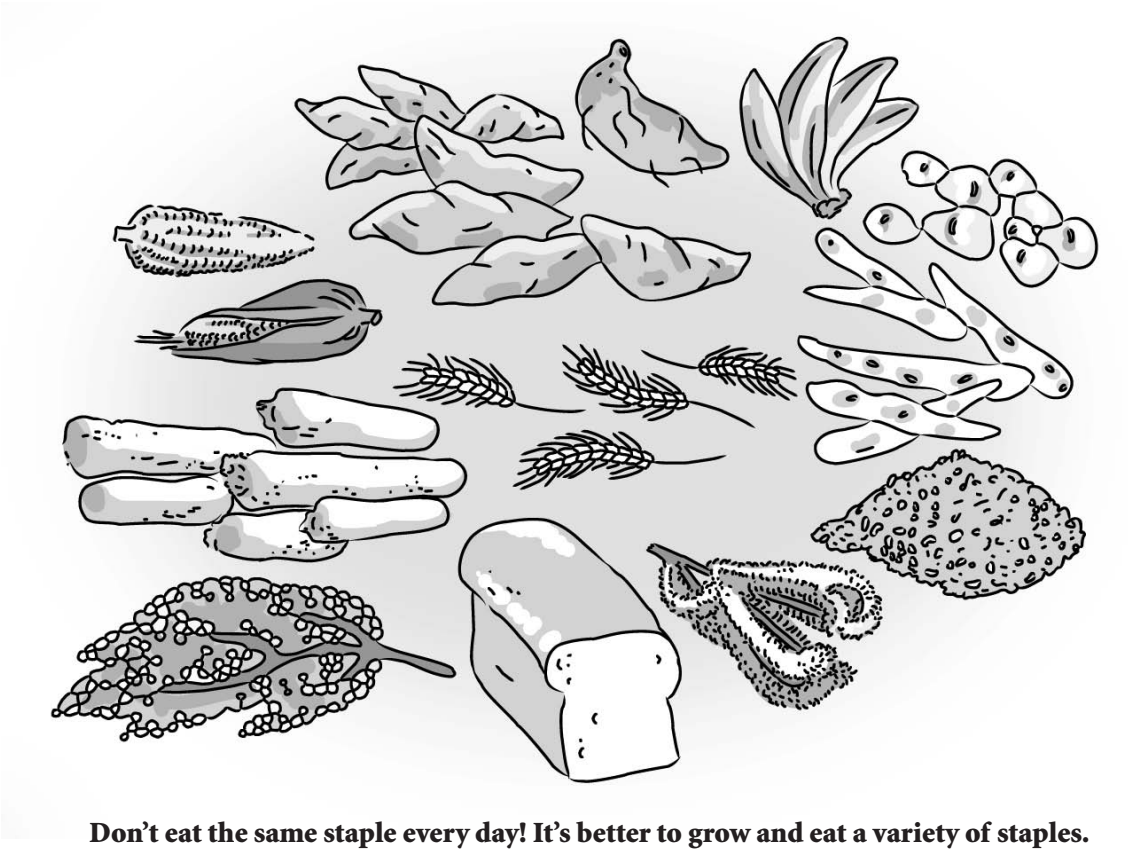
- contain cholesterol (a fat) which can lead to heart disease and high blood pressure
- are more expensive to produce than fish and plant foods
- add to global warming and water shortages, as large animals need high inputs of plant foods and water.

Meat from fish, chickens, rabbits and insects does not have these disadvantages. Goats and pigs are good, too, if controlled in pens so that they don't damage gardens. All dung is useful for manure.

We need **fats** for essential vitamins, as a concentrated form of energy, and for flavour. Fats are found in seed oils, animal meats and milk, margarine and avocado flesh, but eating too much fat leads to obesity and heart disease.

Vitamins and minerals are the essential parts of a healthy diet that are most often missing from meals in Africa. Fruits and vegetables provide minerals and vitamins, but also carbohydrates (energy), fibre and water. These foods are especially important to children and people living with HIV, as they build strong immune systems and protect against disease.

Water and fibre are also essential for health, as our bodies are mostly made up of water!



Don't eat the same staple every day! It's better to grow and eat a variety of staples.

For good health an adult needs at least two litres of water every day but much more if the weather is hot. Fibre is necessary for proper digestion, absorption and excretion processes.

Preserving nutrients

Nutrients, especially vitamins, are easily lost from food that is stored too long, or exposed to too much air, water or heat during preparation. To preserve nutrients:

✓ if possible, keep foods on plants or trees until they are needed

✓ wash vegetables and fruits quickly (soak only beans)

✓ cook in small amounts of water, or steam or stir-fry quickly

✓ cook for the shortest possible times, using less heat

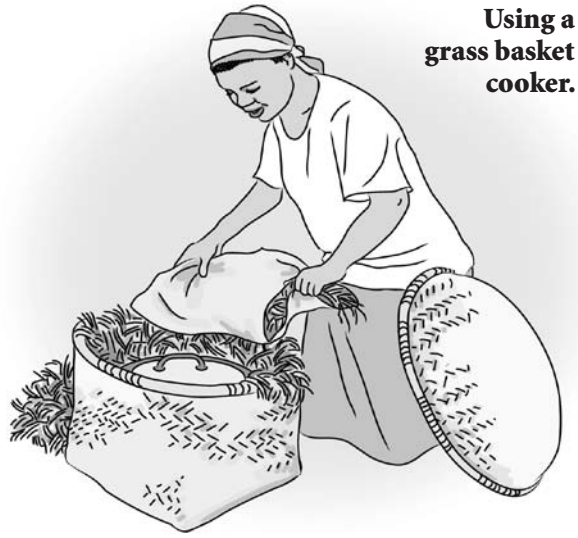
✓ re-use cooking water (which contains nutrients) in drinks or soups.

Using less energy for food preparation

Women can save their own energy and collect and use less fuel wood by simple changes to their routines. For example:

✓ Not all foods need cooking. Fruits and vegetables taste better and are more nutritious eaten raw (but clean), so every day we should eat some raw fruits and vegetables with or between meals.

✓ Buy or make a **fuel-efficient stove** that uses less wood for fast cooking.



Using a grass basket cooker.

✓ Use slow cooking, off the fire, in a **grass basket***, to finish cooking rice, beans or stew started on a fire or fuel-efficient stove.

Better meals for better health

For better health, we should eat:

✯ a greater variety of different foods

✯ brightly coloured fruit and vegetables every day - red, orange, yellow or purple - as well as green leaves, especially dark green leaves

✯ seeds and nuts several times each week

✯ more raw or lightly cooked foods.

Fruits and vegetables take up space on plates and fill stomachs in a satisfying way, as most contain fibre and carbohydrates for energy. So a 'better meal' has a smaller portion of staple food (and not the same staple at every meal), eaten with three or four different items, not one or two.

* Half-fill a large basket or cardboard box with dry grass. Put your empty pot onto the grass and then pack more dry grass around it, up to the well-fitting lid. Take the pot out and use it to start cooking rice (for 10 minutes) or beans (15 minutes). When the food is boiling well, take the pot off the fire or stove and **quickly** place it in the prepared box, then cover the lid with more grass held in an old maize sack.

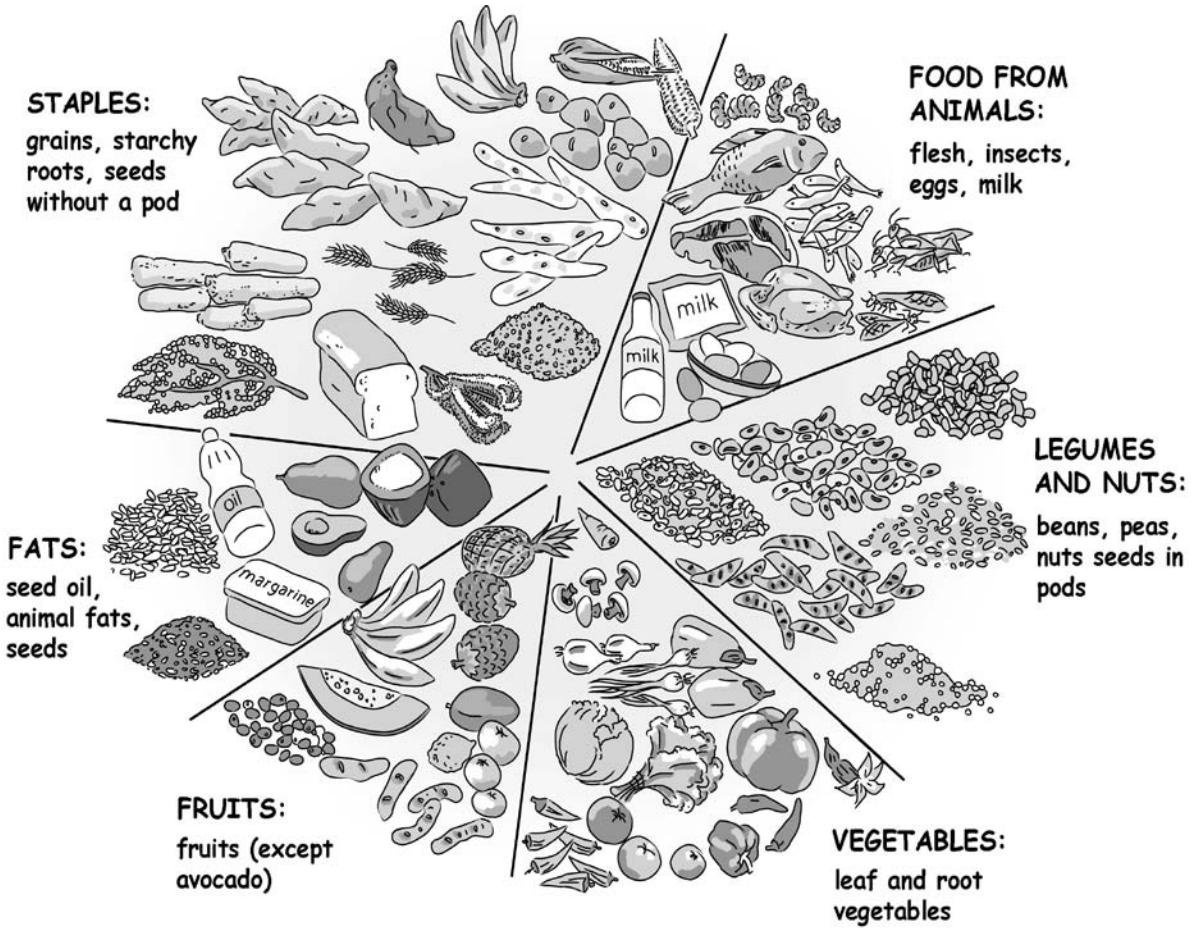


Figure 3: The six food groups.

Food groups

Nutritionists divide foods into six groups to help people choose what to eat, namely:

1. **staples**
2. **legumes and nuts**
3. **fruits**
4. **vegetables**
5. **foods from animals**
6. **fats.**

Each group links foods that are alike (e.g. vegetables) or that feel fatty in the mouth (fats), or that share the same origin (e.g. animal foods), or structure (e.g. seeds in pods). While each food group provides mainly one nutrient, all provide a mixture of other nutrients too. For good health we need to eat foods from all six groups every day. The greater the variety, the better we eat.

Meals and snacks

People living with HIV and children (who have small stomachs) benefit from eating smaller amounts of food more often, rather than one or two large meals. Snacks of fruit, vegetables, seeds or nuts give variety, relieve hunger and improve energy and concentration in school. Sugary drinks or foods (e.g. biscuits and sweets) are unwise because they cause the body to produce too much insulin, a substance which makes people feel 'empty', irritable and hungry again, only an hour or two later. Sugar also damages teeth and helps to cause obesity, which may lead to diabetes. **Appendix iv** suggests some healthy snacks, and describes how to cook or prepare some unfamiliar foods.

Section 4:

Reduce inputs and work, but grow more food - sustainably

'Sustainability' is a long word, but an essential idea. Here are three different ways to explain what it means:

- the **use of resources** at rates that do not exceed the capacity of the earth to replenish them
- an **activity** (farming, fishing or forestry) is sustainable if it meets the needs of people living today, and will continue to meet the needs of their children, grandchildren and future generations
- a **process** is sustainable if it provides for human, plant, animal and environmental needs today, without causing any loss or damage that would spoil that process for future generations.

At present many human activities are not sustainable because they damage or destroy essential resources, such as soil or trees, or use scarce resources - especially water - wastefully or too quickly. Other activities are not sustainable because they use up fossil materials, such as oil or coal, which can never be replaced.

Everyone needs to decide whether it is right or wrong to damage the world for our children, while we satisfy our own needs today. If we decide, as Christians, that our actions must be sustainable, we will need **values** to guide everyday decisions, so that we choose our priorities and attitudes consistently. Here are five values to help daily decision-making, guided by the Gospels and the Holy Spirit:

- ★ Always put people first, as Jesus did.
- ★ Care for and share the gifts of creation, especially soil and water.
- ★ Live within the limits of the resources God has given us, so we limit the size of our families, respect the needs of plants and animals and use natural processes responsibly.
- ★ Avoid waste of any kind.
- ★ Share knowledge and surplus products.

In this chapter we look at three ideas:

1. How people change their attitudes and behaviour.
2. 'Dreams' - or telling ourselves stories about a better future.
3. Challenging traditional farming behaviour by asking: "Could we reduce inputs and do less work - and yet grow more food?"

Changing behaviour

We focus on changing behaviour, first, because many difficulties in life are caused - or made worse - by how we behave, without thinking, every day; and secondly, because

behaviour is easier to change than resources or circumstances. Change usually follows six stages:

Stage 1: We become aware of today's problems and their causes, which include habits of daily behaviour.

Stage 2: We tell ourselves stories about how life could be better if we behaved differently.

Stage 3: We plan, by asking 'What shall we change – and how?'

Stage 4: We practice new behaviours every day.

Stage 5: We re-examine our starting points and progress, to re-adjust action.

Stage 6: We learn from our achievements and mistakes each year, before making new plans based on our successes.

The first three sections of this book were about Stage One. This section is about Stages Two and Three.

Dreaming hopefully

This concerns everyone: young people and grandparents, women and men, even children. Dreams start with private thoughts, but need to be shared with others. We begin by spending time, perhaps a long time, looking at our surroundings and daily lives with 'new eyes'. Do I like what I see and do? If God walked with me, as he walked with Adam in the Garden of Eden, would I be glad to share my garden with God, or ashamed to do so? Would I have time to walk with God in the evening, or do I never stop working?

Next we should share our visions and dreams, listening respectfully to one another. Don't laugh at anyone's dreams, however strange they may seem. God often gives insights and visions to 'younger ones', sometimes to children. Don't dismiss visions too quickly as 'impossible': is anything impossible with God? Remember the visions of Martin Luther King and Barack Obama. Talk, sing and dance your dreams. Above all, pray - and show your visions to God.

Traditional farming and household behaviour: asking questions

Not many people stop to ask questions about what they do each day. "Of course I sweep outside, heat water for tea, wash the children, dig, plant seeds, weed, collect firewood and water, cook, and wash clothes. A woman's work is never finished!" "Of course I clear land for planting, burn rubbish, make fences, plough and ridge land, buy and use fertiliser (if I can afford it!). How else could I feed my family?"

Stop to ask **why** you do each separate activity. Is your effort worthwhile or could it be better used in other ways? Do you work **with** the gifts of creation and natural processes, or do your activities actually interfere with them? Invite older people to tell you how they managed their gardens 50 years ago: what did they do differently and why? How did they deal with pests before pesticides? Did they eat different foods from those we eat today? Was there a greater variety to choose from?

Allow young people to ask 'difficult' questions: why do you plough the whole field, when you only plant parts of it? Why do you plant different crops separately - all maize or all beans? Are there any alternatives to chemical fertilisers? Could we do less weeding? Listen carefully to these questions. "Because this is the way we have always done

Not many people stop to ask questions about what they do each day.

it!" is not a good enough answer. Instead, do some rethinking, using these principles:

- ✓ Combine common sense, traditional and local knowledge and wisdom.
- ✓ Again and again, look at familiar things with 'new eyes'.
- ✓ Look for ways to increase yields and diversity at the same time.
- ✓ Look for solutions rather than problems ("do we have too many snails, or too few ducks?").
- ✓ Look for ways to reduce effort by careful thought or by work (planting trees or digging swales) that is done only once.
- ✓ Cooperate, don't compete, with natural processes (water flows downhill; let it do so, but direct where it goes and use it!).

Section 5:

Seeing opportunities - designs for sustainable living and farming

We may think we have few resources, but if used well, those resources can change our lives. Many people start by listing their 'problems' - then look for ways to solve them. A more hopeful and effective approach is to start from 'resources', not problems. A '**resource based**' approach says, "Let's look at what we actually have, and design ways of using each resource in the best possible way."

Designs for living

In this book we offer a natural resource-based framework for sustainable living and farming. A key word for us is '**design**'. Better use of resources doesn't always happen in response to more effort. Rather, it requires better planning and good design. Planning depends on careful thought about each resource in our surroundings: water, prevailing winds, soil, trees, the slope of land, buildings, fences, rocks, animals, plants, people - in fact, anything at all in the space around our homes and gardens, including our houses themselves. Vision is not about seeing things as they are now, but as they will be, when we use all our resources to work **with** God's gifts of creation, and **with** natural processes, not against them.

We need to be able to see all the different functions each resource offers. A tree, for example, gives shade, breaks the force of wind or rain to prevent erosion, provides fruit to eat, leaves for compost, and its roots hold water in the soil. We plan to use each of those functions fully.

The next step is to consider how each resource can work with other resources found - or placed - nearby. For example, if we want

Trees offer different resources. How many can you see?

to keep chickens for eggs and meat and also start fish-farming, we can link both projects (and reduce our work), by making a raised chicken house with a slatted floor partly over the fish-pond, so that chicken manure drops straight through to feed the fish.

Needs, products and links

As we study our resources, we consider the needs, products and links between individual resources, especially living things, such as trees or animals.

For example, chickens **need** water, food, shelter, dust, grit, space, the company of other chickens, a nest box and medicines. But they **supply** several products: eggs, meat, manure to increase soil fertility or to feed fish, and also work when they eat insect pests and soften the soil by scratching it. So we link chickens to other 'resources' and needs in our design. We feed chickens with kitchen wastes, weeds, or unproductive plants and insects in their mobile cage, which we move from place to place to spread their work around the garden.

Designs and visions

As you look closely at your surroundings, start with your house, the area around the house, and - further away - the rain-fed garden or farm. These three areas are where your vision will take shape. Involve everyone who shares your living space, including men, women, children and elders. Remember the values (ethics) we have chosen: people (not profits) first; care for the earth as God's stewards; living within limits; sharing resources and knowledge; not wasting anything – and consider these principles:

- ✓ Learn from and copy natural (God-designed) eco-systems.
- ✓ Listen to - and learn from - traditional wisdom.
- ✓ Cooperate with natural resources and processes; don't compete.
- ✓ Prefer small, slow, safe solutions; big is not always better.
- ✓ Value, care for and store water, energy and soil.
- ✓ Celebrate differences, especially among plants.
- ✓ Look for ways to reduce work that increase yields.
- ✓ Recycle materials - no waste!

These principles can be applied anywhere in the world, though the methods we use will differ depending on where we live and what we want.

Defining goals

We are not ready to decide how to change our agricultural behaviour until we know what we want to achieve. First, we need to define our goals; this has five stages:

Stage One: What area of land can you use? Start small and go on to larger projects later.

Stage Two: Next, write down or draw or model what your family or group wants to achieve. For example: to grow enough food to feed the family and to earn a certain amount of cash.

Stage Three: Now write down your values, for example, "We value good health, sustainability and the chance for everyone in the family to develop their God-given gifts." Our values give direction to our plans.

Stage Four: List the activities needed to achieve your chosen purposes and values. For example: "To feed the family well we must keep chickens and grow fruits and vegetables

This food looks good - plenty of choice here!

for vitamins and minerals, with a mixture of staple cereals. We also need something to sell, for example, cash crops such as garlic and ginger, or a family member could make fuel-efficient stoves, using his or her gift for pottery.

Stage Five: Finally, imagine what you would like to see on your farm in five years' time. Will there be more trees? How will you be managing rainfall? Will more (or less) land be in use? Will you have crops only in the rainy season, or all year round? Which animals will be part of your farm? What will people see - and say - as they watch your family at work?

Goals will guide us as we make land-use designs and implement them.

Section 6:

Managing water and improving soil

Water and soil are vital resources. The productivity of soil depends not only on the small organisms and 'soil food' it contains, but also on soil's capacity to absorb and hold onto enough rain-water. It is a challenge for farmers to keep every drop of rain that reaches their land on their land, without letting any be wasted as run-off.

Capturing rain-water and improving soil productivity can be achieved, both at the same time, by three important - but surprising - changes to customary farming behaviour.

- We ought to stop breaking up the natural structure of healthy soil by ploughing, digging and 'ridging' it.
- We should never leave soil bare, uncovered by either living or dead plants.
- Sweeping bare ground should stop, too.

We will explain the reasons for the second change ('never leave soil uncovered') first, while describing how to capture water on slopes, and deal with the more surprising advice - 'no digging or ridging' - later. These changes in farming behaviour have been adopted already by many farmers in Africa, South America and Asia, who now get better yields - with less work and fewer costs. You, too, can get the same good results.

Saving water on slopes and storing it in soil: the six 'Ss'

A contour is a line joining points on the land that lie at the same level. Using contour lines helps us to maximise the benefits of rainfall and minimise the damage it can cause through erosion.

1. **Source:** from which direction does water flow onto the slope? Look and see.
2. **Slow or stop** downhill flow of water by a row of stones or a swale (see point 6, below).
3. **Spread** this water across the slope, by the same structures...
4. ...so that rain has time to **sink or soak** into the soil.
5. **Shade** the soil surface with plants (ground cover) or mulch, to reduce water loss by evaporation and to reduce soil compaction by falling raindrops.
6. A **Swale** is a permanent trench dug across a slope and along a contour, with soil from the trench piled as a large ridge (about knee height) on the downhill side (Figure 5, page 35). Prevent this ridge from washing away by planting it with strong-rooted perennial plants such as vetiver grass.

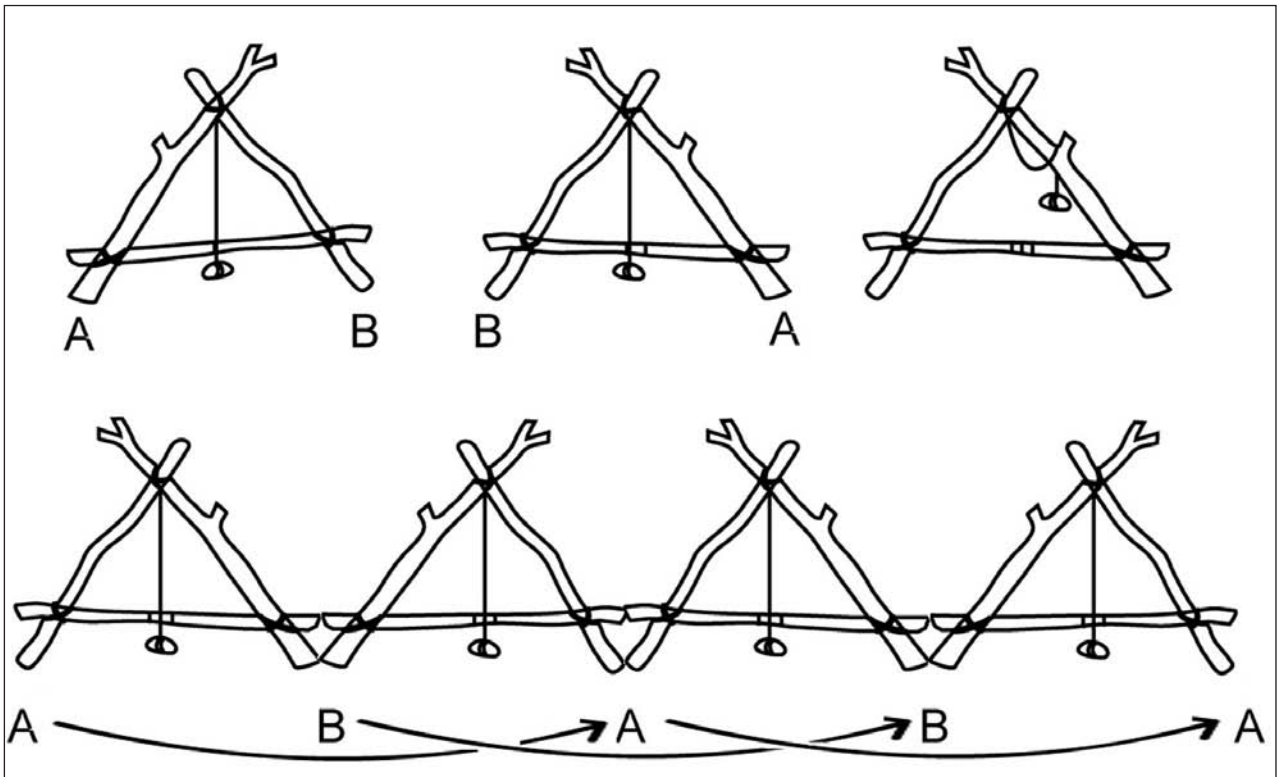


Figure 4: Making and using an A-frame level.

Making and using an A-frame level

Any farmer can quickly and easily make and use an 'A-frame level' to mark contours - accurately enough - before digging a swale across a slope. You need three straight, light poles (each about two metres long), three long nails, strong string, a knife, a hammer, a hoe, a half-brick and a pencil.

1. Tie or nail two poles together at a 40 to 50 degree angle, then tie or nail the third pole across the first two, parallel to the ground at knee height, to form an 'A'.

2. Tie a stone or half brick to the top of the frame with strong string, so that the stone hangs below the horizontal pole.

3. Hold the frame upright on flat ground and mark where the string crosses the horizontal pole with a pencil.

4. Keeping one leg of the A-frame still, rotate the other leg through 180 degrees (keep the frame upright), and again mark where the string crosses the horizontal pole. Half-way between these two marks is the centre point of the A-frame. Mark this permanently with a deep scratch.

5. Now use the A-frame to mark level ground (a contour) across a slope. Whenever the string hangs over the central mark, both legs of the A-frame are at exactly the same level on the ground.

6. Place one leg (A) where you want to begin. Swing the other leg (B) until the string touches the centre point on the horizontal pole. With a hoe, mark the ground between A and B.

7. Keeping the second leg (B) still, move the first leg (A) until you find the next level place, and again mark the ground between the two legs.

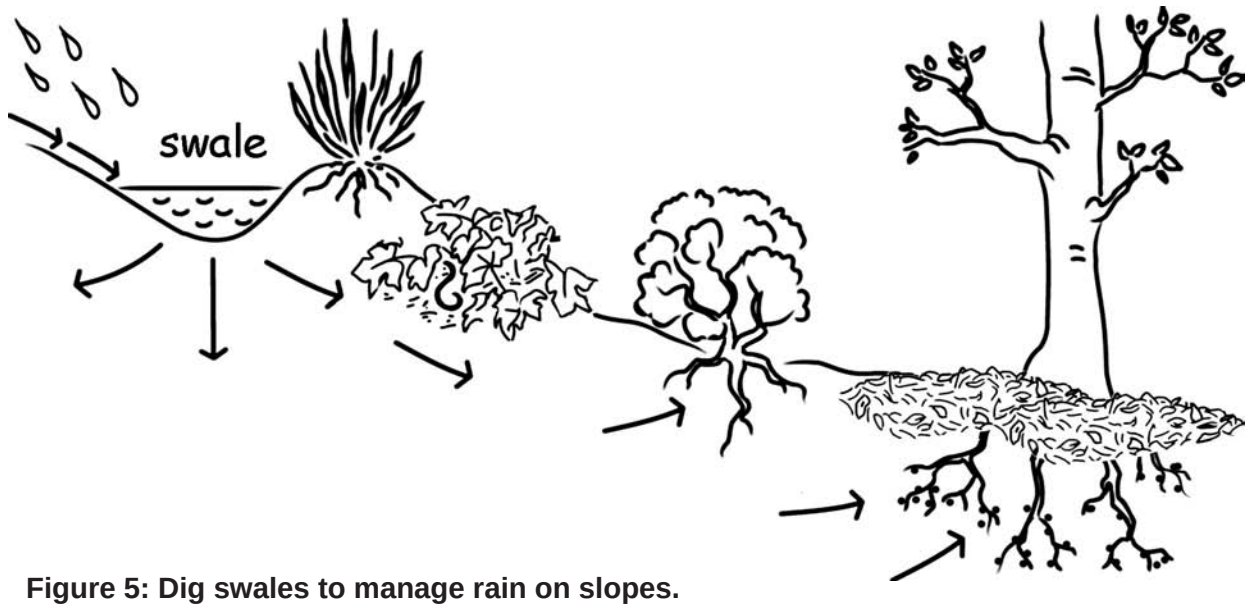


Figure 5: Dig swales to manage rain on slopes.

8. 'Walk' the A-frame along the ground until you have marked out a line across the contour, always keeping one leg still (see Figure 4 opposite).

Go to the top of your land in heavy rain to see where run-off starts: this is where to mark the first contour and dig the first swale. The steeper the slope, the narrower and deeper each swale trench should be. Pile up soil from the trench in a large even ridge on the downhill side and plant vetiver grass or lemon grass on it. If the first swale overflows in heavy rain, make a second swale, further down the slope. The base of each trench must be level (use an A-frame to check).

Cover the bare soil just below the ridge with useful shallow-rooted plants (e.g. pigeon peas or tephrosia) and two metres down the slope plant deeper-rooted trees (legumes or fruit trees). Continue to cover the soil with plants in rows running parallel to the swale across (never up and down) the slope.

Make raised paths, from top to bottom of a slope, at right angles to swales, so that where paths cross trenches, together they turn the land into shallow rectangular plots. Keep trenches open and swale ridges strong by yearly maintenance, but the hard work of digging a swale is done only once!

Improving soil: is artificial fertiliser useful?

For the last 50 years, 'experts' and governments have advised farmers to use artificial nitrogen fertilisers, and backed this advice with subsidised supplies. At first cereal yields did improve, so many farmers stopped 'feeding' their soil with compost and manure. Later, however, more fertiliser was needed each year to maintain yields and, as costs increased, profits decreased. So today many farmers are trapped in a cycle of fertiliser dependency and believe that their soil is 'exhausted'.

For good growth plants need plenty of carbon - as well as nitrogen and micro-nutrients. Plants and soil 'livestock' prefer to get their needs from organic matter in soil, that is, from decaying plants or animals in compost or mulch. When these natural forms of carbon

and nitrogen are not present in the right quantities, soil productivity decreases.

When artificial nitrogen fertiliser is used, it encourages bacteria in soil to process carbon and mineral nitrogen, some of which is turned into organic nitrogen (nitrogen linked with carbon) that plants can use. However, too much mineral nitrogen hinders formation of 'plant-friendly' organic nitrogen. Also, the balance between amounts of carbon and organic nitrogen in soil is critical: if amounts of organic nitrogen exceed amounts of carbon, productivity falls. The 'livestock' (worms, bacteria and fungi) in healthy soil has had millions of years of experience of getting this balance right, but farmers using artificial fertilisers have often got the balance wrong.

In 2009 researchers measured nitrogen in soil that had received artificial fertilisers for many years. Instead of finding increased levels, researchers found the opposite: levels of nitrogen, near the surface and deeper down, had fallen. This was true in the USA, Europe, and also in Africa, Asia and South America.

The researchers concluded that using artificial nitrogen fertilisers is harmful, not helpful, and they advised farmers everywhere to stop using them, to prevent further loss of natural soil fertility.

People who practise permaculture and organic or conservation farming have been giving this advice for over 20 years, based on their own experience. We offer the same advice now - very strongly - in this book.

Improving soil: are digging and ploughing useful?

Recent research in Africa and the USA has examined the long-term effects of 'tilling' soil by digging or ploughing it. There are two obvious effects: first, the small natural spaces in healthy soil are broken down into smaller and less useful spaces, and secondly, organic - or 'carbon-containing' - matter is brought to the surface. This is not useful, as it is rapidly broken down in air to carbon dioxide so its value as long-term 'soil food' is lost. When tillage stops, the amount of organic matter in soil improves, as shown by better yields and by direct measurements.

We can heal and improve damaged soil by ceasing to dig or plough it ('no-tillage'), by keeping the soil surface covered and using compost or manure, by planting legumes that 'fix' nitrogen from the air, and by mixed planting and crop rotations. Mixed planting is so important for soil-healing that it is the main subject of Section 7.

Restoring health to compacted soil - without tillage!

To demonstrate - to yourself, your family and your neighbours - that digging is not necessary, turn a patch of bare, hard, compacted soil near your house into a vegetable bed, letting natural processes work for you.

Mark out the shape and size of the bed (we suggest an area of 1 metre by 2 metres) with half-bricks or stones, leaving narrow paths for access. Stop sweeping this area, walk only on the paths and teach others to do the same. If necessary, rake paths to collect leaves or rubbish, but put everything (except plastics) onto the compost heap or the new bed.

Slash unwanted plants, but leave their roots in the ground to decompose and leave the slashed plants on the soil surface. Allow chickens (in a mobile cage) to let air into the soil by scratching the surface for a few days, while they manure the ground. Water

the bed well (using 'grey' water*). Now cover the whole area with four layers of dry banana leaves or newspaper, placing each layer at right angles to the previous one, to keep out light. This kills weed roots underground. Cover the bed with a moist layer of compost or decomposable waste materials, or mature manure, then repeat the layer of banana leaves, dry grass or newspaper. Several times use a thin layer of soil or vegetable wastes from the kitchen or ash from wood fires. Alternate these two layers (dry and moist) until the bed reaches knee height, finishing with a thin layer of soil. Water well and leave it to rot down for four to six weeks, keeping the bed moist all the time. (see Figure 12, page 70.)

Then start planting seedlings or seeds, making small holes in the mulch with a stick. It will never be necessary to dig this bed - just add more mulch. Sweet potatoes act as good diggers to bring up nutrients from the soil. This method can be used for flat beds and also to make 'soil' for raised beds in old car tyres or baskets for city gardens. You may want to add a thorny fence to keep out goats and chickens.

Improving soil: are liquid top-dressings useful?

Yes, if you make them yourself from animal dung or plants! The smaller the animal, the stronger the manure that it produces. To make liquid animal manure, fill a bucket with water (use 'grey' water) and add one beer carton of animal dung. Stir well, then stir daily for three days (pigeon or chicken), four days (goats) or six days (cow manure). It is ready to use when bubbles of gas rise to the surface on stirring. Strain and dilute the liquid as a top-dressing for plants or seedlings. Put solids onto the compost heap.

To make liquid manure from plants, put green tithonia or bonongwe (amaranthus) leaves in an old sack and hang it over a bucket, in the shade, for two to four weeks. Squeeze liquid out of the sack into the bucket and put the remaining solids onto the compost heap.

Apply liquid manure to wet soil round roots when slow growth or yellow leaves show that plants are 'hungry'. Dilute one part of liquid manure with 40 parts of water for seedlings or drip bottle irrigation, or use one part to 20 parts of water for vegetables.

Human waste is useful, too

Urine, whether from animals or humans, contains urea, which is organic nitrogen and too good to waste! Dilute one part of urine with five parts of water to repel termites, water compost heaps, or to pour through baskets of sand to water vegetables in beds.

Human solid waste should be allowed to decompose into organic matter before it contaminates the soil or ground water, as happens when conventional pit latrines are used. Instead, ask a permaculture trainer for advice on how to construct composting toilets, to make solid wastes safe for use in farming.

* Water that has already been used, e.g. for bathing, washing clothes or dishes, or cleaning vegetables.

Section 7:

Mixed planting, more food and fewer pests

Why do so many farmers plant single crops - all maize, all beans or all cassava - with empty soil between straight rows? Is this practice copied from 'nature'? We may think that monoculture increases farming efficiency, but does it actually give us better yields, with less effort and lower inputs?

We praise God for the variety of creation, and for the varied gifts of the Holy Spirit. Saint Paul insisted that we must share the Spirit's gifts, if the Church as the Body of Christ is to flourish. People need other people; we are not designed to grow alone!

The same is true for plants; they, too, need companions with 'gifts' to share. Mixed planting or inter-cropping is designed to meet individual plants' needs for support and protection, and also to improve soil productivity. In practice it provides more food, at lower costs, because:

- improving soil productivity and water content increases yields
- harvests are spread throughout the year, so there is no 'hungry season'
- crop losses to drought, pests and diseases decrease
- artificial fertiliser is not needed
- groundcover reduces competition from weeds.

As soil regains productivity, it grows healthier plants that resist pests and diseases better.

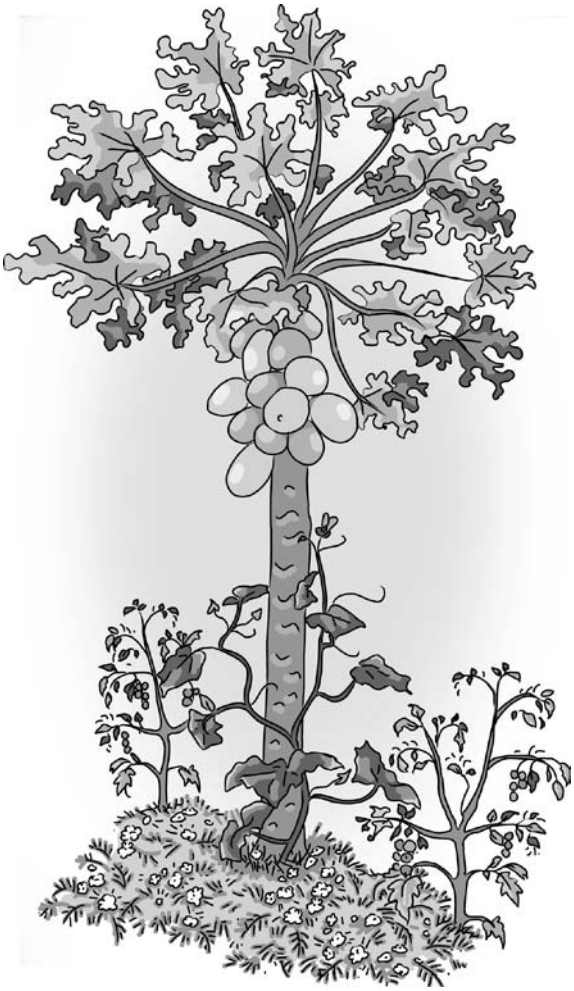
Protective planting is more specific. Some protective plants (onions, garlic, marigolds) have strong smells which keep specific pests away, while other 'protectors' are so attractive to pests that they get eaten first, instead of food crops.

Mixed planting strategies

We plan to use **all** functions of each plant chosen, not just the foods they produce. For example, pumpkins or groundnuts act as living ground cover, to reduce water loss and suppress weed growth. Deep-rooted plants, like sweet potatoes, act as 'diggers' that break up compacted soil, and raise soil food to feed shallow-rooted plants.

Legumes are a large family of plants that have their seeds in pods and carry small nodules on their roots. Whether the legume is a large msangu (falderbia albida) tree or a small cow-pea, the specialist bacteria in root nodules absorb and concentrate nitrogen from air dissolved in groundwater. They produce 'plant-made' fertiliser, which is used by the legume itself and by plants growing nearby. Some legumes (e.g. beans, peas) feed people while others (e.g. leucaena, msangu) feed animals, but all improve the productivity of the soil, without the costs and disadvantages of artificial fertilisers.

We arrange mixed plants either in groups or **guilds** that support and protect each other,



Mixed planting - a guild.

but don't compete (as they take different nutrients from the soil), or in **rows** to:

- mark boundaries
- make live fences or wind-breaks
- intercrop rain-fed plots.

Choose mainly local plants that are well-adapted to local soil conditions and which resist local pests and diseases better than exotic plants imported from other continents, like maize or gum (eucalyptus) trees.

Mixed planting may include:

- local plants that grow at different levels, as ground cover, shrubs, trees and climbers needing support
- perennials and annuals (no hybrid annuals because they don't produce fertile seeds)
- deep and shallow rooted plants
- 'heavy' feeders (such as maize and cabbages) and 'light' feeders (such as carrots and onions)
- legumes to fix nitrogen from the air
- plants for human food or medicines and animal fodder
- ground cover plants to protect soil from overheating, reduce water loss through evaporation and suppress weeds
- 'protector plants' that repel pests or attract them away from valued crops.

If only one crop is planted in a field (mono-culture), pests or diseases spread easily and the whole crop may be lost. But if plants of one variety are separated in small groups, pests and diseases spread less easily, and losses are smaller.

Keep a **garden notebook** to list plants that grew well together and combinations to avoid. Record plants grown in different beds each year, and methods used to feed the soil. Plan **crop rotations** that avoid build-up of pests or excessive loss of soil nutrients.

Finding seeds and seedlings for mixed planting

Farmers don't have to buy expensive commercial seeds, or rely on government 'handouts' of subsidised seeds. Other sources include:

- Family and friends' kitchens for fruit and squash seeds: guava, papaya, pumpkin, tomato, avocado, cucumber, tops of pineapples and carrots, garlic
- Your own garden if you let beans and peas produce seeds

- ‘Volunteer’ seedlings on rubbish or compost heaps (tomato, mango)
- Plants that form clumps that can be split with two forks (lemon grass, onions)
- Seed and seedling ‘fairs’, where farmers exchange or buy seeds or seedlings
- Root or branch cuttings to propagate many trees.

Every family needs a **plant nursery**, where seedlings are protected from animals, heavy rain and excess sun until they are strong enough to survive field conditions. Make the nursery in a shady place, near the house for daily care and access to ‘grey’ water, and protect it with a thorny fence. Plant two or three seeds into good compost, in individual ‘pots’ so that seedling roots are not disturbed when planting-out, and plants can be moved easily as their needs change. For good drainage, stand pots on beds of sand. Pots can be made from small bags or half-bottles of plastic, banana stem bark, or from beer or milk cartons. While they are small, seedlings need grass shelters to protect them from direct sun or heavy rain.

Pests, diseases and mixed planting

Pests and diseases reduce or destroy crop yields, so wasting farming time, effort, and inputs - but don’t expect to stop all losses, as there are too many different causes.

Beneficial bacteria, insects and worms are essential ‘livestock’ in healthy soil, which is why chemical pesticides, that kill both ‘good’ and ‘bad’ organisms, do more harm than good, as well as damaging human health. Instead, plant ‘protector plants’ near those that are damaged by common pests. For example, mix onion, garlic or other strong-smelling plants with members of the cabbage family, to reduce attack by aphids.

Another strategy is to prepare and use cheap natural remedies that are made at home, using water to soak leaves or stems from pounded plants (ginger, garlic, chilli, marigolds, tephrosia, cassava, tithonia). Some natural remedies are mixed with soapy water to help them to stick to leaves. Spray or flick solutions directly onto infested and infected plants. Remember that some natural remedies, such as neem leaves, are poisonous, so be sure to wash vegetables in clean water before cooking and eating them.

CROP	PEST	REMEDY
Tomato	Red spider mite	Marigold spray
Cabbage	Cutworm	Neem spray
Stored maize grain	Large grain borer	Eucalyptus and lipia javanica leaves put into the grain bags
Brassicas	Aphids	Wood ash sprinkled after watering or garden rue leaf spray

Dispose of diseased plants by composting (a compost heap gets hot enough to kill weed seeds in about a week; see page 58), feeding to stock to prevent spread to later crops or - as a last resort - by burning. Groups of farmers should encourage one member to become the local ‘expert’ on pests and diseases. Buy a reliable reference book (see **Appendix iii**) to consult when problems occur - but also learn from experience.

Planting plans for three common sites

Here are suggestions for mixed planting in:

- a linear shelter-belt to mark a boundary
- a rain-fed field
- a guild around a bath-house or a borehole pump.

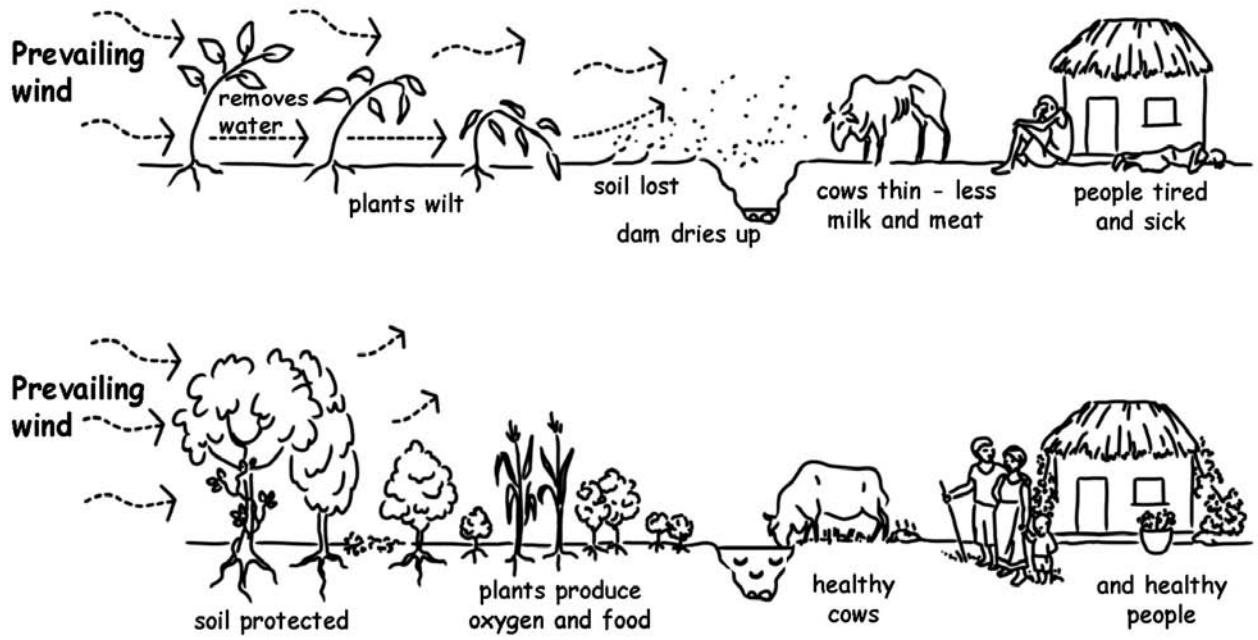


Figure 6: Prevailing winds - with and without a windbreak.

Shelter-belts or windbreaks of perennial indigenous trees and shrubs are planted along boundaries or contour ridges to:

- protect land from drying winds and break the force of heavy rain
- provide wood for fuel and buildings
- provide foods and medicines
- fix nitrogen from air (legumes) to enrich soil and compost
- make homes for natural predators that control pests
- keep thieves and animals away.

If the main purpose of a shelter-belt is wind or rain control, it is best slightly curved in the shape of a cow's horns, with the thickest part meeting the main force of wind or run-off, and the 'horns' tapering away downwind or downhill.

Suitable larger trees are neem (many uses), msangu (legume), moringa (leaves for food and seeds for water purification) and acacias (fodder and legumes). Add smaller trees or plants such as guava and mulberry (fruits) bamboo (mats) and leucaena (legume and fodder), followed by shrubs such as sisal (livestock barrier and string), tithonia (deters termites), tephrosia (natural pesticide and fixes nitrogen), comfrey (for liquid manure) and lemongrass (tea) or vetiver grass (soil stabilisation on slopes and thatching).

Mixed planting for **rain-fed** plots is designed to reduce the work of planting and harvesting, while maximising the benefits of 'mixing' and to provide a secure food supply throughout the year, with no 'hungry season'.

Start with a background grid of legume trees planted in rows four to 25 metres apart, depending on the size of the species used, for some nitrogen fixation over the whole plot, and use nitrogen-fixing trees in the boundary planting, too. Msangu (falderbia albida), leucaena, acacias and sesbania are all suitable for this purpose. Next, set out narrow, permanent access paths or lanes, following horizontal contours if the land slopes or a less regular pattern if it is flat.

Borehole with run-off watering plants in a pit bed.

Plant each area with a limited number of different plants - four or five species that do well together, separating maize or cassava throughout the field, to reduce losses to pests. For example, maize, beans and pumpkins are very productive, as pumpkins also yield oil seeds. Nearby, place leafy plants from the cabbage family, which combine well with garlic, onions and basil as cash crops. Yams are an under-utilised but semi-permanent crop that grows well with finger millet or any shallow-rooted or non-root crops. Light climbers, like beans or climbing spinach grow well with sunflowers and maize. As most beans grow quickly, sow them two or three weeks after slower-growing plants (e.g. maize), to avoid competition.

Guilds are planted in a circle, round a bath-house or a pit-bed which receives the run-off from a borehole pump. Choose plants that need water and that produce common foods (e.g. bananas, tomatoes, paw-paw, lemongrass, sugar cane) and climbers (e.g. granadilla, passion fruit) to cover fences.

Include pyrethrum daisies to frighten away mosquitoes, or make a fishpond nearby.

Learning more about mixed planting systems

Mixed planting is an old practice that is being re-discovered. We expect it to be an important strategy in a new 'green revolution' which will change farming over the next 25 years. We need local, farmer-led research to find out what works best in different climates and soil conditions, and we should learn how to adapt mixed planting to farms of any size and type. We suggest that you write down plant 'companions' that grew well together - and plant 'enemies' that did not, in your garden notebook. But to get you started, we have listed some well-known plant 'companions' and 'enemies' in **Appendix ii**.

Section 8:

Farming for a better life, locally and in the world

Farming, as part of Christian discipleship, is honourable work. Happiness and health increase when people grow what they need with lower costs, fewer 'inputs' and less effort, but most farmers could achieve more than this minimum goal! By learning special skills they can lift their families out of poverty - and become able to help people in need, as the Gospel expects. Farmers should contribute to the creativity of communities where they live and to the coming Kingdom of God in the world.

This chapter introduces four topics:

- Special skills to increase productivity (including animal and fish farming)
- Life-long learning
- Cooperation among farmers
- 'Global co-operation': how our skills and attitudes can help to build a sustainable future for everyone.

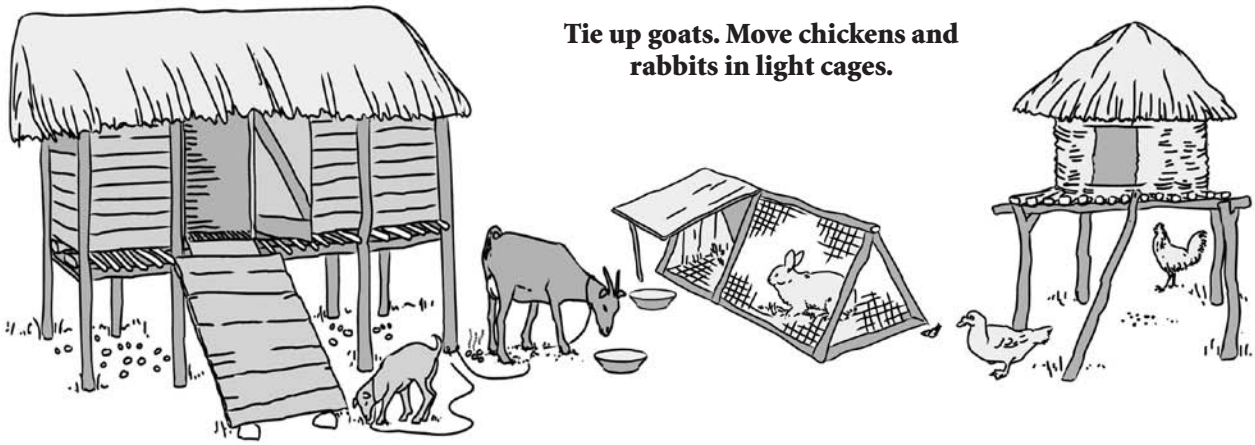
These subjects are too large for a small book, but too important to leave out. We offer resources for learning more (books, journals and networks) in **Appendix iii**.

Special skills to increase productivity

Most farmers could earn more money by learning special skills from experienced people. Some - but not all - special skills need extra equipment. You could consider:

- fish-farming (aquaculture) and keeping small animals and birds
- selecting, collecting and storing good quality seeds
- developing tree or plant nurseries for reforestation and food
- propagation of plants by grafting
- growing and using herbs for medicines, essential oils or flavours
- growing unusual plants for special markets (e.g. hotels or export)
- bee-keeping for honey, wax and to help pollination of plants
- making fuel-efficient stoves as a small business
- adding value to foods by processing or making preserves
- taking part in research to improve farming materials or methods
- teaching improved farming as a 'lead farmer' or permaculture tutor.

Fish turn plant wastes, or dung from small animals, into tasty animal protein very efficiently. Fish also supply first-class protein and oils that care for the health of hearts, brains and blood vessels, and vitamin A, which protects eyesight and strengthens defence systems to fight infections, especially in children and people living with HIV. Any farmer who has a year-round water supply, some flat land, and soil containing clay or silt that 'holds' water well, should consider fish-farming, as links between fish and other animals or crops are used at every stage.



Tie up goats. Move chickens and rabbits in light cages.

Small birds and animals don't use much land and have fewer needs than larger animals. They breed quickly and produce better dung to add to compost, or to make liquid manure for top-dressing. Their meats contain less fat than beef, pork or goat, so are less likely to cause heart disease. If they are kept in light-weight cages that can be moved around, chickens, ducks and rabbits help to control pests: ducks like snails - farmers don't!

Tether 'improved' goats by day and keep them in goat houses at night. Then goats can earn their own food by being milked to feed young children.

Life-long learning

This book was written to introduce new farming ideas and methods, not to teach you everything you need to know for the best possible results. **Appendix i** contains addresses of organisations that can help you to become experts in 'agricultural behaviour change'.

We suggest that you start 'life-long-learning' by continuing to meet once a month. Remind one another of what you've learned already, and share experiences, as you practice new skills. Keep simple records of your farming work, while you watch your yields increase and inputs and effort decrease.

After six months, invite people to a meeting in your community to share ideas about what to do next. Would you like to start dry season irrigation to grow vegetables or a short season crop like beans? Or will you reclaim a compacted school-yard for an orchard? Pay special attention to resources no-one has noticed before, and to criticism, which is an undervalued 'resource'.

Wives, husbands, friends or neighbours who didn't come to the first workshop may ask to be trained in the future. Take responsibility for this, using the training in this book. 'Improvers' can help with a 'beginners' programme, but need more expert training for themselves, though we suggest that you practise for one year, before asking for more advanced general training.

Cooperation between farmers

The benefits of cooperation to consolidate learning and arrange training are obvious, but you will discover other advantages. For example:

- Discuss policy decisions and speak as a group to local or central government. Women members especially need support, to maintain their rights to land - and to avoid exploitation.
- Buy materials or equipment as a group.
- Improved markets: share transport to town or hold a regular farmers' market.
- Share records to collect information for research more quickly, especially as growing conditions change with the climate.

- Develop 'resilience' and prepare to cope with natural disasters. Becoming more 'resilient' means that we identify and deal with local weaknesses, set up early-warning systems, prepare and store emergency supplies, and make defences against floods.

Global cooperation

Small-scale farmers are needed to join a new **global movement** with ambitious aims: to change non-Biblical ideas and systems that have controlled social, agricultural and economic development for the last 200 years. These 'ideas and systems' are causing dangerous changes to the world on which we depend for life, so Christian discipleship requires that we revise them urgently.

In December 2009 the United Nations (UN) held a Conference in Copenhagen, for members of governments and international organisations, with the aim of agreeing on urgent measures to stop global warming. This Conference was not successful. However, many 'ordinary' people were in Copenhagen at the same time, to attend an alternative meeting, called Klimaforum 09, which aimed to build support for a different approach to many of the problems facing us today. For 'climate change' is not the only crisis threatening the world.

We must also cope - now - with loss of soil productivity, water shortages, unsustainable use of other scarce resources, deforestation, unsustainable economic and trade systems and a growing gap between rich and poor people. These issues present greater challenges to all forms of life than we have ever faced before, but they will not go away if we simply wait - and do nothing. Ordinary people in Copenhagen called for a **system change** to the way we live, so that we live in cooperation with God's creation.

Participants in the Klimaforum 09 conference in Copenhagen published a Declaration on the Internet. They declared: "We want to take the future into our own hands by building a strong popular movement of youth, women, men, workers, peasants, fisherfolk, indigenous peoples, people of colour and urban and rural social groups; a movement that is able to act at all levels of society to deal with environmental degradation and climate change."

This '**strong popular movement**' has three aims:

1. To make the planet more productive and less fragile than it is now.
2. To help ordinary people to regain control over their health and the production and distribution of food.
3. To achieve more fulfilling lives and more opportunities for future generations.

If we ask "who should join in, where, when and why?" the answers are clear:

WHO? Everyone!

WHERE? Everywhere!

WHEN? Now.

WHY? Because the crises that we face are so serious that the alternative to effective action will be the end of civilisation, followed by the end of human life on earth.

We must regain and then guard ownership and control over local resources of water, land, energy and food needed for well-being. They must be rescued, peacefully, from control by local or global 'elites' for the benefit of society as a whole.

In Africa several grassroot networks have recently come together to form the Alliance for Food Sovereignty in Africa. Food sovereignty is about our access to good and healthy food and our right to control the production and distribution of food. Your community can link with this movement through organisations like the Rescope Programme and the PELUM Association, whose contact details are in **Appendix i**.

Transformation and transfiguration

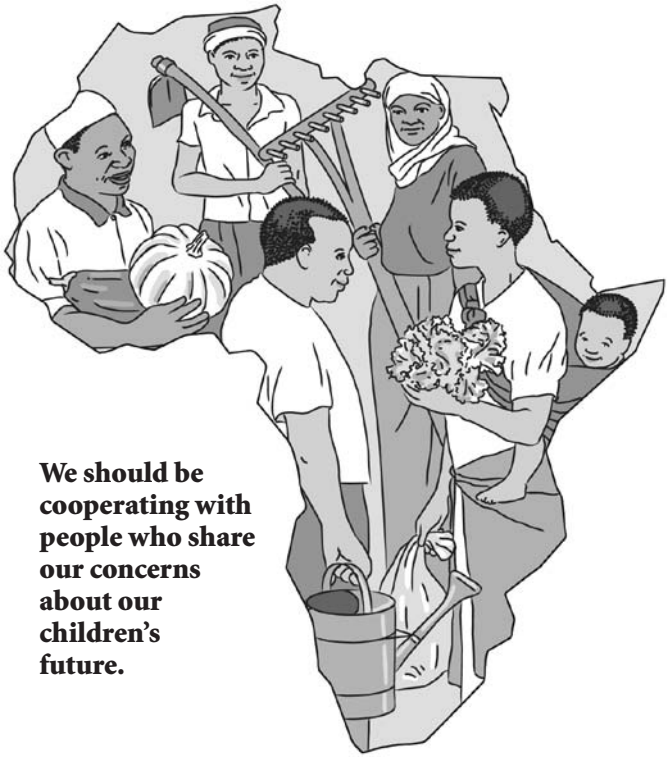
In African culture we teach children to accept gifts with two hands, not one. We should accept the offer of 'abundant life' in our present situation with the same whole-hearted enthusiasm, for our communities and for ourselves.

We need trust that Jesus' 'servant leadership' is effective, and courage to base our own leadership on his 'servant' model. We need patience for the slow work of rebuilding productive soil, re-growing forests, and re-modelling our land to make better use of resources we already have. Patience - to wait for results - is a gift of the Holy Spirit who watches (so patiently!) our slow progress towards behaving as sons and daughters of God in our dealings with each other. We need hope to believe that transformation **is** possible, for ourselves, our gardens and our communities.

God's final plan in creation and in the life, death and resurrection of Jesus, is the transfiguration of all things into "a new heaven and a new earth" where sorrow and death no longer exist. At present, we wait for this fulfilment, for ourselves and the whole of creation, "that the creation itself will be set free from its bondage to decay and will obtain the freedom of the glory of the children of God" (Romans 8:21).

While we wait, Christians can and should be cooperating with other people – who are not all Christians but who share our concerns for our children's and grandchildren's futures. Together we can:

- Encourage positive responses to crises where we live.
- Preserve existing trees - and plant more - where we live, and use farming practices that conserve water, soil, energy and bio-diversity.



We should be cooperating with people who share our concerns about our children's future.

- Work to make our own community independent of fossil fuels by 2030 and to increase everyone's access to renewable energy, to improve local livelihoods and standards of living.
- Strengthen community structures that support 'servant leadership' and allow ordinary people to take part in making decisions.
- Strengthen peaceful co-operation in the use of shared resources across regions and continents (health, agriculture, cultures, trade, education).

We suggest that a few people in each local community should meet every three months, to talk and pray about how to improve the world our children will inherit. The next step is to draw more people into the group and to work at one or more of these suggestions, as our contributions to building 'a strong popular movement'.

When local people talk, pray, plan and act together, we trust that the Holy Spirit will transform the unhealthy thinking that led to our present crisis, and renew our lives after the mind of Jesus Christ, to the glory of God, and to our increasing joy.

Part Two

Eight modules, which describe how to organise eight participatory meetings in the community

Module A:

Looking at life now - to ask questions

General aims: To identify local concerns about food and farming.

Specific aims: To find mentions of 'food and farming' in the Bible.
To ask why 'food security' is a problem here and now.
To challenge negative images of 'farming' and 'farmers'.

Preparations: Make sure cooks know how to make healthy drinks and snacks (see **Appendix iv**).

Note for facilitators: We advise using four peer groups for most activities: **unmarried youth**, **grandparents** (both sexes in both groups), **other women**, and **other men**. It doesn't matter if peer groups are unequal in size.

During plenary sessions, participants and leaders sit in a large circle, on chairs or mats, with everyone at the same level. Don't have a table in front of anyone, but have a flip chart on a stand, where everyone can see it, near the workshop leader.

Most group activities require flip chart paper and a marker pen, but instructions to supply and use these materials each time are given only once – here!

Activity A1:
Welcome and introductions

Aims: To welcome participants and form peer groups.

Description: Prayerful silence and greetings.

Materials needed: Adhesive labels.

Time needed: 20 minutes.

1. Register participants as they arrive, listing full names, addresses and cell-phone numbers, if used. Do not yet distribute name labels.

2. A senior church leader, or the workshop leader, welcomes everyone and announces that this workshop is about 'Food and Farming in the Life of this Community'. Write this on the flip chart. He or she then says slowly, prayerfully, with short pauses between each sentence:

- "Be silent, to notice that you, you yourself, are here."
- "Each person here is different from everyone else who has ever lived!"
- "You are here because God made you. Thank God for the gift of life."
- "You are here because God loves you. Whether or not you like yourself, God loves you!"
- "You are here because God cares for you – God seeks you out to be a partner in the continuing work of creation. How wonderful!"

"The heavens are the Lord's heavens, but the earth he has given to human beings." (Psalm 115, verse 16)

Pray: "Creator God, in this huge universe, all that is, you seek us out and call us to be partners in your work of creation. We don't want to fail you!"

3. After a brief silence, say: "Stand up, move around and *silently* greet two or three fellow-gardeners-with-God. Every one of us is here for a purpose. Then sit down again, but in a different place from where you are now."

4. When everyone is seated again, say: "We need name labels, so that we speak to one another personally, as gardeners-with-God." Start two sets of adhesive labels and marker pens moving in opposite directions round the circle. Ask each person to write her or his first name on a label. When everyone, including the leaders, has a name label, say firmly: "Everyone's viewpoint is equally valuable here, but many people find it easier to speak out in a small group. So we shall work in *peer groups* of people who are alike in age, so that no-one feels left out."

Ask young people who are not yet married to identify themselves by standing for a moment, then ask grandparents to stand briefly. Explain that young unmarried people form the first peer group, grandparents the second, other women the third, and other men the fourth group. Make sure everyone understands which peer group they belong to.

Activity A2:

The Bible: what does it say?

Aim: To encourage people to search the Bible, especially the Gospels, for material about food and farming.

Description: Bible study in peer groups followed by discussion.

Time needed: 30 minutes.

Directions:

1. Move into peer groups. Give each group a different question:

- **Young people:** "What do the Gospels say about farming?"
- **Grandparents:** "What does the Old Testament, especially Genesis, say about food and farming?"
- **Women:** "What do the Gospels say about meals and mealtimes?"
- **Men:** "Who were the heroes of Jesus' parables?"

2. After 15 minutes return to the large circle for brief reports. Points that may be made:

Food and farming are often mentioned in the Bible, especially in the Gospels. There are no parables about carpenters, but many about farmers, vineyards and shepherds. Jesus ate with people so often that he was called a glutton and a drunkard! Outsiders (women, sinners) were always present at meals where Jesus was a guest, and he knew our human need for food.

3. Ask people to go on looking for examples of food and farming in the Bible and to find hymns or songs about farming - or to write new ones for meetings.

Activity A3:

Life today, here in this community

Aims: To look at what is good and what is difficult about farming and to express achievements and concerns.

Description: Work in peer groups, followed by discussion.

Time needed: 40 minutes.

Directions:

1. Start by saying: "We want everyone to have a chance to speak, so we'll work in

peer groups." Allow time for the four groups to come together in different parts of the same room, where everyone can hear and see you.

2. Ask three questions, spaced 5 minutes apart, to allow time between each question for the groups to talk and write down responses.

(a) What pleases you most about your own garden or farm?

(b) In the last 5 years, have you learned something new that has improved your garden or farm?

(c) What difficulties do you have in your garden or farm? How can you overcome them? If you don't have a garden, what would make you want one?

3. Five minutes after the last question, return to the large circle, and invite groups to report. List their responses on a flip chart. Record each repetition of any idea with a new tick by the original record. It will soon be clear that people share the same likes, the same ability to learn new ways and similar problems.

This activity helps to bond the group, as people enjoy voicing triumphs, what they have learned and their farming challenges. Leaders learn how experienced (or inexperienced) the group is and gain a useful overview of their situation.

4. Attach the work sheets on a wall for the rest of the day.

'Tea break' (15 minutes): provide traditional tea, but also home-grown alternatives such as lemongrass 'tea' and non-traditional snacks (see **Appendix iv**).

Activity A4:

Farming in the past, today and in the future

Aim: To collect ideas about present day and future prospects for farming.

Description: Work in peer groups followed by general discussion.

Time needed: 30 minutes.

Directions:

1. Move into peer groups again and ask: "Do outputs from your gardens or farms meet your needs and hopes?" Each group should record their responses.

2. After three minutes, ask each group to answer a different question:

- **Young people:** "What would make you want to be a farmer?"
- **Grandparents:** "Could you use your past experience to tackle today's farming problems?"
- **Women:** "What changes would make your lives - as farmers - easier?"
- **Men:** "What changes would improve your crop yields?"

3. After 10 minutes return to the large circle for reports. Hear the women first, then the men, then the grandparents and finally the young people.

This can be a very productive activity, with excellent - if unexpected - contributions, especially from grandparents. In workshops in Malawi, women mentioned child-spacing, that all family members must help on the farm, and good time management. Men described farming practices that improved crop production in sustainable ways. Grandparents spoke with confidence and enthusiasm about their experiences 30 or 40 years ago, describing how farming methods and conditions have changed, for example:

- "the soil is exhausted now"
- burying (not burning) crop wastes after harvest
- past use of legumes (e.g. msangu trees) to improve soil
- maize, sorghum, millet, groundnuts or beans planted side by side, not separately
- greater diversity of trees and animals.

Be enthusiastic about good farming practices from the past, and encourage discussion. Make sure that people understand the links between farming behaviour and good outputs. If negative language suggests a sense of helplessness, challenge peer groups (not individuals) with a direct question: "Does what we do in our gardens or farms make no difference to our yields?"

4. Ask: "Is it time for a new 'behaviour change' programme - **'agricultural behaviour change'**?" Write these last three words on the flip chart. Pause, then add: "The first change we need is a more positive view of ourselves as farmers!"

Activity A5:
Ourselves as farmers

Aim: To voice – and question – farmers' negative self-images

Description: Peer group role plays, followed by group discussion.

Time needed: 45-60 minutes.

Directions:

1. In the large circle, say: "Role plays help us to understand our thoughts, feelings and the reactions we expect from other people." Explain that each peer group has 10 minutes to prepare a three-minute role play about a woman who tells her neighbours that she intends to stop sweeping round her house and make vegetable beds there instead! Show how her husband, the headman, elders, and others react.

2. Allow peer groups 10 minutes to plan their role plays, then bring them together again. Watch each role play before allowing verbal comments. At a workshop in Malawi one 'headman' supported the woman's decision, which was unexpected.

3. Ask what the role plays show about the status of farmers and their ideas. Are farmers worth listening to or are their voices ignored? Write down common one-word opinions of 'farmers' on a flip chart, separating negative and positive words in two columns and invite comments.

4. Say: "For many years no-one asked an important question, namely: 'Who can grow more food per hectare - an industrial farmer, or a smallholder?'" Invite answers, and make sure everyone understands that smallholders can indeed be more productive, hectare for hectare, than industrial farmers.

Module B:

"We are rich!" Looking at resources through new eyes

Activity B1:

Worship and review

Aims: To learn to value natural resources.

Description: Guided meditation followed by review of Module A.

Time needed: 20 minutes.

1. Worship and meditation

In the large circle, sing a worship song about creation, then ask someone to read **Mark 4, verses 26-34**. After a short silence invite comments. Ask: "Has God already given us the resources we need for good crop yields?" (Yes!)

First we will meditate, using the words of Julian of Norwich, a woman who lived in England 600 years ago. Give everyone a single groundnut. Ask each person to look at the nut, lying on the palm of his or her hand, while you read, with pauses, what Julian saw and heard:

"God showed me a little thing, the size of a nut in the palm of my hand, and it was round as any ball. I looked at it with my mind's eye and thought, 'What can this be?' And the answer came, 'It is all that is made.'

"I marvelled that it could last, for I thought it might have crumbled to nothing, it was so small. And the answer came into my mind, 'It lasts and ever shall because God loves it.' All things have being through the love of God.

"In this little thing I saw three truths. The first is that God made it. The second is that God loves it. The third is that God looks after it."

Keep silent for two or three minutes, then stand, with a warm but silent gesture of welcome!

2. Review of Module A

Ask how people feel after the first module. Do they feel encouraged or anxious? At a workshop in Malawi, someone said: "There *is* something in farming…." and someone else said: "It's good to be here!" Remind everyone that smallholders *can* be more productive than large-scale farmers.

Activity B2:

Appreciating our resources: soil and sun

Aims: To explain soil contents and functions, and the sun as the source of all energy.

To contrast 'renewable' and 'non-renewable' energy sources.

To introduce and explain 'global warming'.

Description: A plenary session using questions and a flip chart drawing.

Time needed: 40 minutes.

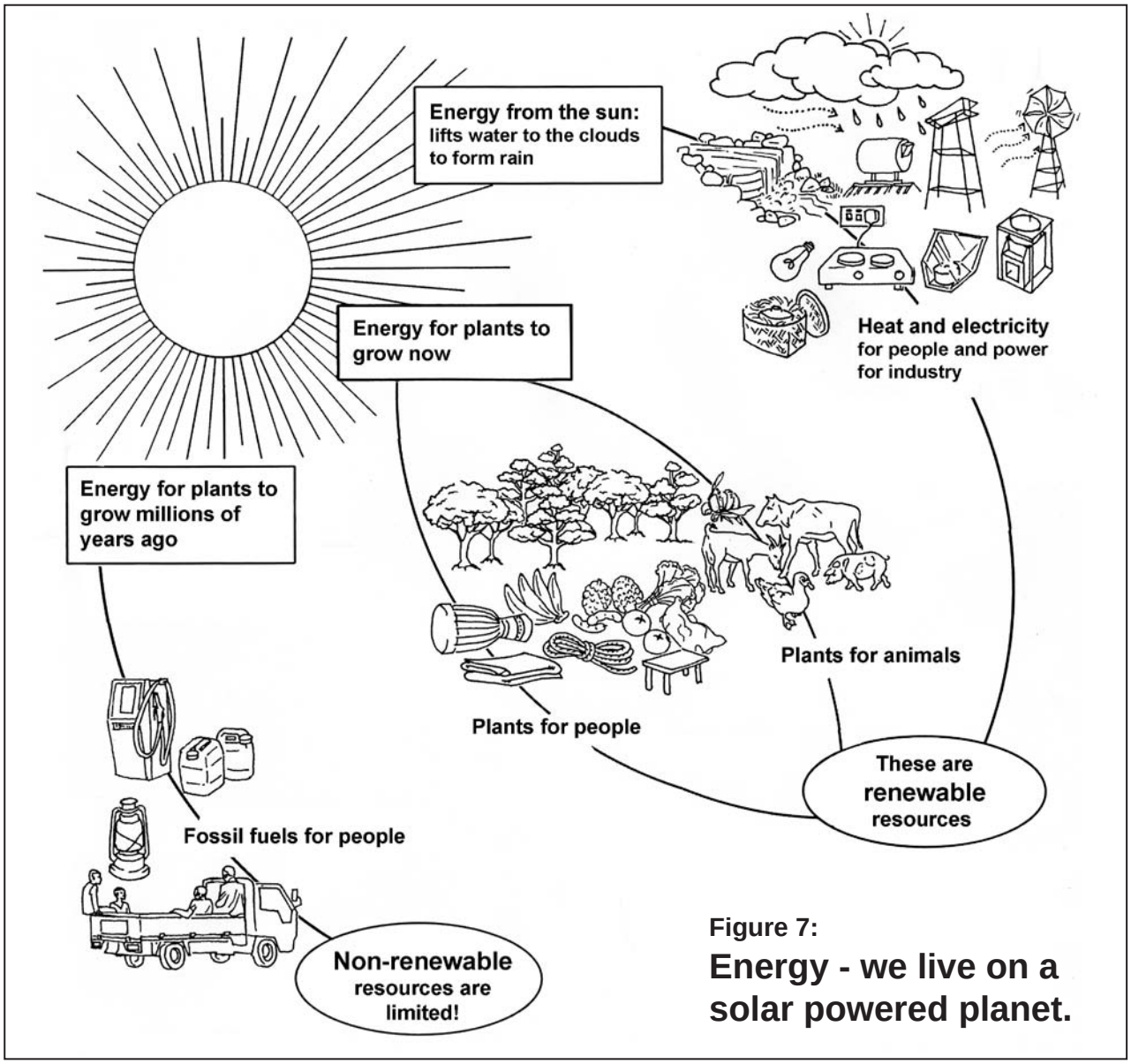


Figure 7:
Energy - we live on a solar powered planet.

Directions:

1. Say: "We take for granted natural resources such as the sun and the soil. But we do not make full use of these gifts. Why? Because we don't think about how energy flows from the sun to earth, and we don't take good care of soil."

Ask: "What is soil?" (A mixture of powdered rock, water, decaying plants and animals and small living creatures.) Ask also: "Is soil alive or dead?" (Healthy soil is alive, not dead. It should be covered, not left naked.)

Ask: "How does energy from the sun reach us?" (Through plants, renewable and non-renewable sources.) Make a flip chart drawing (see Figure 7, above). Define 'energy' as power to 'make things happen' and list examples, e.g. human and animal muscle power; heat; wind, electricity, hydro-electric power.

Ask: "Why are plants so important?" (Only plants can use solar energy directly to grow and reproduce. Plants feed all living things, by making carbohydrates or energy-food, using energy from the sun, water, green chlorophyll in leaves, and carbon dioxide from the air.)

Ask: "Why is oxygen important?" (Because it is essential for human and animal life.)

Ask: "What about animals that eat meat?" (Meat-eaters rely on plants to feed the plant-eating animals that they eat.)

Note for facilitators: Plants take in carbon dioxide, make carbohydrates with energy direct from the sun, and give out oxygen. In contrast, animals and humans breathe in oxygen, use plant and animal foods for energy, and breathe out carbon dioxide.

Ask: "Why don't animals and humans use the sun's energy to make their own food, instead of relying on plants?" (Humans and animals have no chlorophyll, the green pigment in plants, so they can't use energy from the sun directly. They have a different pigment, haemoglobin, which carries oxygen and gives blood its red colour.)

2. We all need food, but we also need energy for lighting, cooking, and for transport and industry. Energy from the sun - 'solar power' - can be used directly to heat water or to make electricity using solar panels. It is also active indirectly, when it lifts water from the soil and the sea to make rain clouds, which release rain to form rivers and other sources of hydroelectric power. The sun also powers weather systems and - through plants - makes fuel wood and vegetable oils. Renewable energy from wind, tides or water doesn't produce carbon dioxide, and plants actually remove carbon dioxide from the air and release oxygen in exchange.

Ask: "What are the sources of non-renewable energy?" (Coal, oil, paraffin, natural gas.)

Ask: "What is another name for these energy sources?" (Fossil fuels, because they come from sun-energy stored in plants and animals that lived and died millions of years ago.)

Ask: "Will our stocks of fossil fuels last for ever?" (No. These stocks are running out now and they cannot be replaced.)

Explain how burning fossil fuels in the last 100 years has increased carbon dioxide gas in the atmosphere, where it acts like a thick blanket, preventing heat from the sun being reflected back into space. As a result, African winters are warmer, rain patterns are changing and the snow on Mt Kilimanjaro is melting.

3. Invite questions. Emphasise that renewable sources of energy never run out, but non-renewable sources certainly will run out, probably while our children are still alive. We need to plant more trees to use up more carbon dioxide.

4. End this activity with this two-minute energiser. Ask the participants to stand up and move into a line, with arms outstretched to touch the fingers of the next person, standing about two metres away. Challenge them to spell the word 'SUSTAINABLE', using their bodies to form the letters (use the vernacular word if easier or applicable).

Activity B3:
Looking at soil with new eyes

Aim: To contrast the qualities of healthy soil and compacted soil.

Description: Open-air demonstration.

Time needed: 45 minutes.

Directions:

1. Lead everyone outside. Most workshop sites have areas of hard, compacted soil, with no plant life, nearby. Ask how the soil got like that. (People walk over it, it is swept every day, and heavy rain runs off it in sheets.)

2. Now walk (some distance if necessary) to the edge of 'waste land' or a forest. With your hands, separate groundcover, leaves and other 'rubbish' to expose crumbly, moist, fertile soil underneath. Invite people to smell and feel this, while you comment positively on worms, insects and plants.

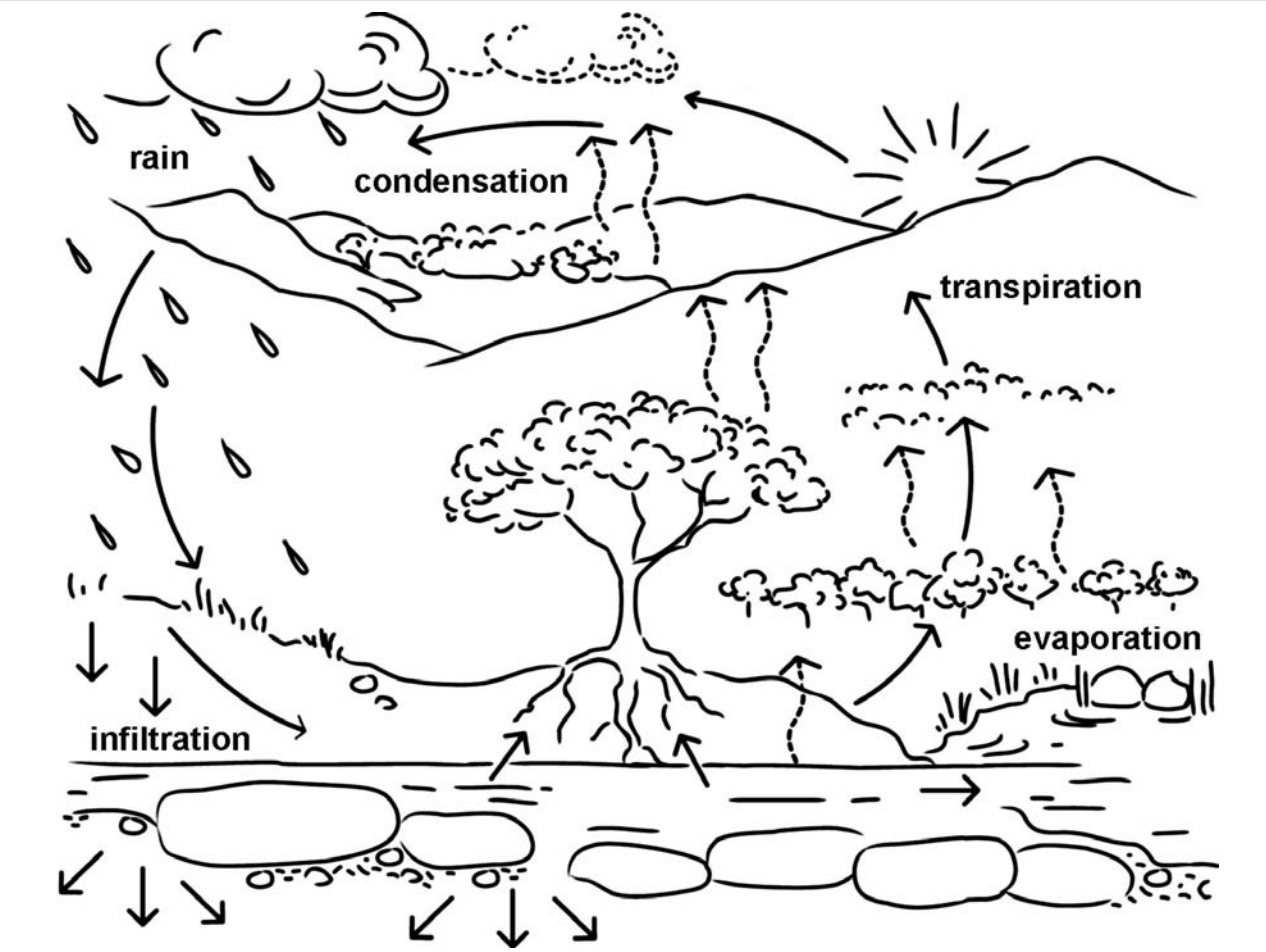


Figure 8: The water cycle.

3. Return to the compacted soil and ask: "How could we turn this compacted soil into a productive bed to grow vegetables?" No digging is needed! Instead, we need deep layers of compostable 'rubbish', some animal manure, dry leaves, 'grey' water and a thin layer of top-soil or compost on the surface. When these layers start to rot down, we make small holes to plant vegetable 'diggers', such as sweet potatoes, to grow as ground cover and to dig into the compacted soil, to restore its life.

"What will the neighbours say?" Don't worry about that. Just wait until they see the vegetables you will be eating in six months' time!

Tea break (15 minutes): don't forget home-grown alternatives.

Activity B4:
Appreciating our resources: water

Aims: To link managing rainfall to preventing soil erosion.

Description: A plenary session using questions. Recording ideas with diagrams.

Time needed: 30 minutes.

Directions:

1. Start with rapid questions, while an assistant draws the water cycle (Figure 8, above) on a flip chart, stage by stage:

"Where does rain come from?" (clouds) - assistant draws clouds.

"What happens when rain falls onto:

- flat, soft soil or grass? (it soaks into the soil)
- flat, hard ground? (it can't easily soak in, so it runs off)
- a bare slope? (some rain soaks in, but most runs off, carrying topsoil away, causing erosion and gulleys)
- rivers or lakes? (surface water level rises).

"How does rain fill wells and springs?" (by raising the water table, or ground water around them)

"Where is water best stored?" (in soil, as surface water evaporates faster)

"How does water from soil, plants and surface water return to the clouds and turn into rain?"

- evaporation from soil and water surfaces
- transpiration of moisture from plants into air (tie a plastic bag round living leaves, and return later to find water in the bag)
- moist air condenses to form clouds
- moisture is released (precipitation) as rain.

2. We have now drawn the complete water cycle. Human activities can disturb or improve the water cycle, making it less - or more - effective.

Ask: "How do people disturb the water cycle?" (Cutting down trees, exposing soil surfaces, sweeping soil, compacting soil by walking on it, making roads and buildings.)

Ask: "What effects do we see?" (Soil erosion, blocked drains and ditches, floods, a low water table so shallow-rooted plants die, siltation and dry soil.)

Ask: "How do people improve the water cycle?" (Preserving and planting trees, holding rainfall on slopes to allow water to sink in, by covering soil with mulch or plants, collecting run-off water from roofs, roads and boreholes; recycling used or 'grey' water.)

Activity B5:
Trees and the water table

Aim: To let participants work out the consequences of cutting down trees.

Description: Work in peer groups.

Materials needed: A4 handouts of Figure 9.

Time needed: 15 minutes.

Directions:

1. Ask peer groups to draw two pictures, one showing how rain behaves on a slope covered

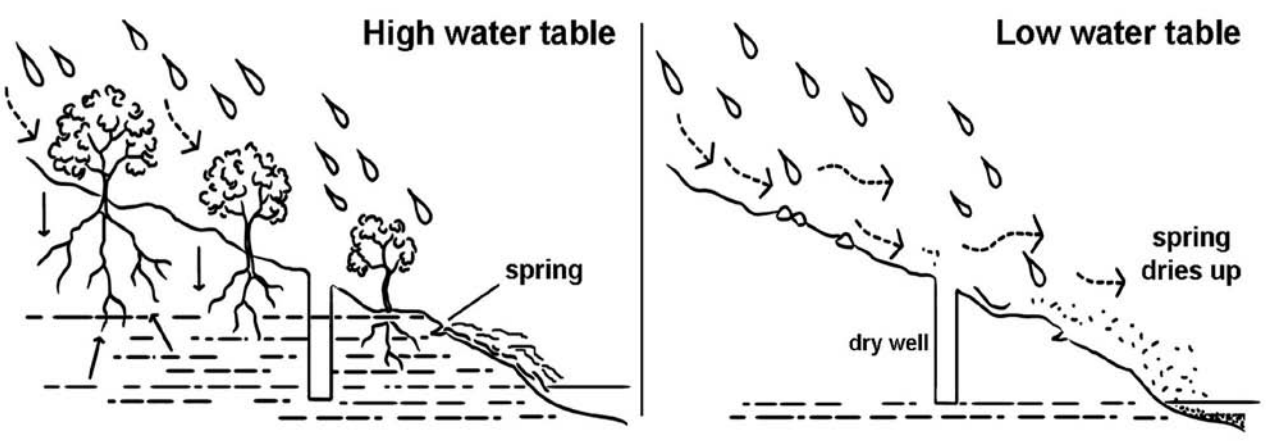


Figure 9: High and low water tables.

with trees, and the other how rain behaves on a bare slope. Each picture should include a well and a spring (see Figure 9, below).

2. After 5 minutes ask each group to talk about their pictures. Discuss how the water table changes during rainy and dry seasons, and ask whether deep and shallow rooted plants survive.

Distribute A4 handouts of Figure 9 (page 57).

Activity B6:
'Rubbish! Rubbish! No Compost! Compost!'

Note for facilitators: Compost is natural fertiliser formed by decomposing plant, insect and animal wastes. It is made in a heap, in a place that is moist and shaded, for example, under a tree, close to where it will be used. The heap should be about 1 metre wide, 1.5 to 2 metres long and 1 metre high, so an adult can apply water easily.

Aims: To present 'rubbish' as an under-valued and under-used resource and to demonstrate compost-making.

Description: Discussion of how to sort 'rubbish'; demonstration of compost-making.

Time needed: 45 minutes.

Directions:

1. Ask a few people to describe their own rubbish heaps or pits. Ask: "Do you sort your rubbish?" (Not many people do.) Describe how to sort rubbish for re-use by separating glass and plastics (which don't decompose), and using everything else to make compost.

2. To make compost you need a hoe, a shovel, a watering can or hose, two sticks 2 metres long and materials to compost: dry, coarse maize or other stalks, uncooked kitchen wastes, dry or green leaves, grass, ash, manure (from livestock), and some soil (see Figure 10, above).

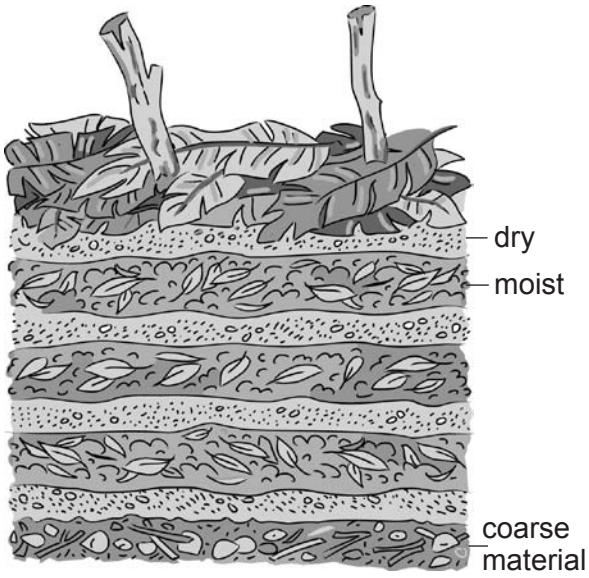


Figure 10: Making compost.

3. Clear the site, leaving slashed plants lying on the surface. Add the coarsest material. Now build in layers, alternating dry plant and paper wastes (sources of carbon), with green moist wastes (sources of nitrogen) such as fruit peelings, green grass and dung.

4. Water the layers thoroughly and cover the surface with a thin layer of soil.

5. Finally, push two 2 metre sticks through the heap to ground level. After a week pull one stick out – it should feel hot. Pull the second stick out after two weeks. If it is cool, the heap should be turned with a shovel to speed up decomposition. Moisten the heap whenever it is dry, with 'grey' water or urine.

6. The compost is ready to use when it is crumbly, dark-coloured, sweet-smelling and no longer contains large pieces of plant material. In warm conditions, the whole process should take four to six weeks.

Module C:

Food, nutrition and better meals

Preparations: Copy of Figure 11, a ball, a fuel-efficient stove, and food and pots for the cooking demonstration.

Activity C1:
Worship and review

Aims: To show that Jesus knows our need for food and to review Module B.

Description: Worship in plenary session.

Time needed: 30 minutes.

Worship

In a large circle, sing a song of thanksgiving for life and food.

Ask someone to read **Mark 6, verses 34-44**. Pause, then announce a guided meditation, spacing questions over five minutes to give time for reflection.

Invite each person to imagine that he or she is part of this scene. What was it like, listening to Jesus all day?

What did you think about as Jesus and his disciples talked in the late afternoon?

Were you surprised at what happened next?

Now ask each person to turn to a neighbour, to share thoughts and feelings about the story (5 minutes).

What did the disciples do with the leftover food? One group in Malawi said that, if this happened in their community, news about free food would spread quickly, so more people would arrive to join the feast! Finish with a thanksgiving for food, health and life.

Review of module B

Draw an outstretched hand on the flip chart to remind participants of 'resources' (see Figure 1, page 19). Ask if anyone has now seen a familiar resource with 'new eyes'? What was it? Listen to two or three examples.

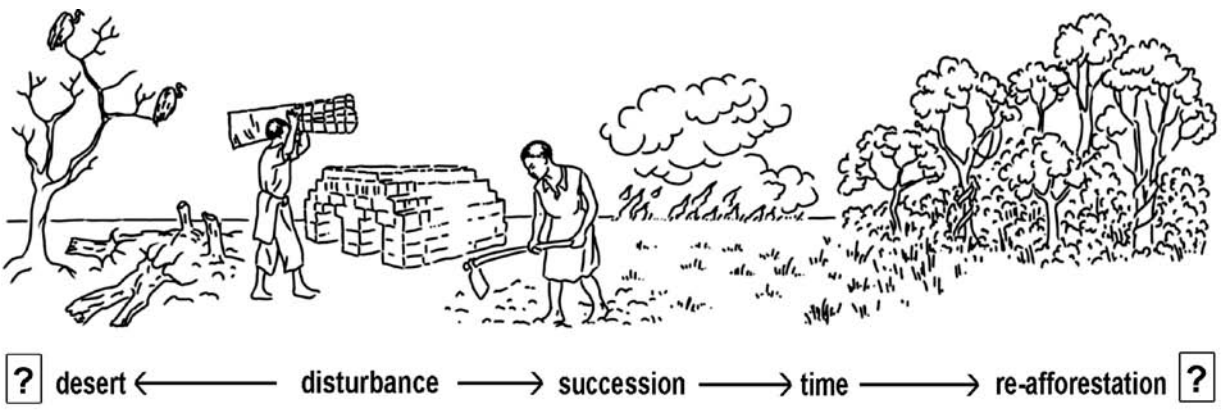


Figure 11: Where are we today?

Show an enlarged copy of Figure 11 (page 59), and invite someone to point to 'where we are today'. The volunteer will probably choose the 'desert' end of the picture. Ask: 'Can we stop making deserts?' Emphasise that we choose, by our actions, whether to walk towards 'desert' or towards 'God's forests'.

Today we will look at food with 'new eyes', because we choose what to eat! Our choices affect our own and our families' health and happiness, as well as the profit from our farms and the wellbeing of the communities where we live.

Activity C2:
Looking at food with new eyes

Aim: To focus attention on food choices.

Description: Game to express food choices.

Time needed: 5 minutes.

Directions:

Ask everyone to stand in a circle, and take a ball to the centre. Explain that you will throw the ball to someone, naming a meal, for example, 'midday yesterday', 'last night', or 'breakfast today'. The person catching the ball says what she or he ate, and immediately throws the ball to someone else, naming a different meal. Keep this game fast!

Activity C3:
What do we eat now? Did we eat differently long ago?

Aim: To focus attention on food choices today, compared with past choices.

Description: Work in peer groups followed by plenary discussion.

Time needed: 45 minutes.

Directions:

1. Move into peer groups.

2. Ask the grandparents to remember foods they ate when young, which they never (or rarely) eat now. Were these foods people liked, or were they 'famine foods', used only when there was nothing else to eat? Do 'famine foods' still grow in forests or fields? Write these questions on a sheet of flip chart, and ask them to record their answers on the paper. Note: don't allow the other groups to overhear what the grandparents are discussing.

> **Note for facilitators:** Grandparents usually list an impressive variety of foods eaten years ago, many unknown to younger members of the workshop. Their list of foods will interest a nutritionist or a botanist from a University or the Ministry of Agriculture.

3. The other three groups all answer the same question: "How do you decide what to eat?"

4. Allow 15 minutes for discussion before returning to the large circle for reports. Grandparents may demand more time, which you should allow, while listening to the other groups.

5. When the young people, women and men (in that order) have spoken, invite comments on how we make food choices. Were seasonal foods mentioned? How important are 'customs' and costs? Do we eat certain foods to show that we are 'important', not 'ordinary' people? Do the cooks' skills matter?

6. Ask the grandparents to answer their own, different, questions, and encourage a discussion about 'famine foods'. Why are they scarce now? Ask about previously popular foods that are missing in today's meals. Put the work sheets on a wall for the day.

Tea break: don't forget herbal teas, water and healthy snacks!

Activity C4:
Nutrients and food groups

Aim: To introduce food groups and practice identifying nutrients in them.

Description: Descriptive teaching in a large circle, using questions.

Time needed: 15 minutes.

Directions:

1. Ask: "What is a nutrient?" (A substance found in food that our bodies need for health, every day.) An assistant writes 'Nutrients' at the head of a flip chart, with the definition underneath.

2. Ask: "Name some necessary nutrients." (Carbohydrates or energy foods; proteins or building and repair foods; fats for more energy; vitamins and minerals to protect from disease; water and fibre.) Note that some nutrients, such as carbohydrates, are required in large quantities, while others, such as vitamins, are needed in smaller quantities.

3. Ask: "How do we know what to eat?" (By dividing foods into groups that are associated with different nutrients.)

4. Ask: "Does each food group supply just one nutrient?" (No. Different groups supply mainly one nutrient, but most foods provide a mixture of nutrients.)

Activity C5:
Better meals use all six food groups!

Aim: To practice using food groups to eat more varied meals.

Description: Action game.

Materials: A table covered with paper, with a large circle drawn on it. Divide the circle into six segments for the six food groups, as illustrated in Figure 3, page 26. Place samples of two familiar foods in each food segment; put samples (or pictures) of other foods next to the diagram. If there are more than 15 participants, prepare two tables.

Time needed: 30 minutes.

Directions:

1. Point to, and name, each food group. Name a few familiar foods, and place each in the correct segment.

2. Ask the participants to sort the other foods into their correct groups. After 5 minutes, check results, discuss items that were difficult to place, and invite people to name - and add - foods grown locally that have not been mentioned.

3. Write next to each segment the main nutrient which the food group supplies, in red capitals and other nutrients in black. Stick the poster on a wall.

Activity C6:
Choosing to eat 'better meals'

Aims: To compare the content and nutritional value of ordinary local meals with those of 'better meals'.

To plan how to change an 'ordinary' meal into a 'better' meal.

Description: Plenary demonstration and discussion.

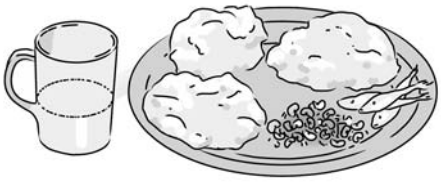
Materials needed: A flip chart and a blackboard, side by side; chalk and a duster.

Time needed: 45 minutes.

Directions:

1. In a large circle, draw a plate on the flip chart, and ask what an ordinary meal is like. Draw a small quantity of 'staple' food, and one or two small helpings of 'relish' on the plate. If people protest that "we need more nsima (or other staple)!" add two large spoonfuls. Ask: "What nutrients does this meal supply?" (Mainly a staple food for energy, some fat, small amounts of protein and even smaller amounts of vitamins and minerals.)

Ordinary meal.



2. Ask whether it is more or less difficult to grow these foods now, compared with 10 years ago. (More difficult.)

Ask: "Could different food choices provide a 'better meal', which would have different consequences for nutrition, health, gardens and the environment?" (Definitely.)

Ask: "What changes shall we make to this ordinary meal?" Invite suggestions. Draw an 'ordinary meal' in chalk on the blackboard, then modify the drawing as people make their suggestions: "More variety? Good! Where shall we put it, as the plate is already full? Could we eat less staple food (rub out two helpings of staple) and eat something else instead?"

Better meal.

Ask: "What nutrients are missing from the ordinary plate? (Vitamins and minerals.) "What shall we add to supply these nutrients?" (Vegetables and fruits.)

Ask: "Do we need more protein?" (yes) "How can we get more protein?" (Chicken or rabbit, if you grow them yourself, or legumes and nuts.)

If participants were served a 'better meal' during a previous session, refer to this and base your questions on the foods provided. Comment that they ate a smaller-than-usual helping of 'staple', and ask if anyone felt hungry in the afternoon. (If the meal was well-planned and cooked, the answer will be 'no!') Explain that we feel 'satisfied' when we eat a good mixture of nutrients; large quantities of maize porridge are not necessary.

3. Discuss the consequences of 'better meals' for nutrition, health, garden labour and the environment. Ask which meal fits Gospel promises of 'abundance' and Biblical demands for good stewardship of creation ('better meal') and which is best for a celebration. A 'better meal' is more festive!

Draw a poster to show an 'ordinary meal' and a 'better meal' to put on a wall for the rest of the workshop.

4. Finish this module with a demonstration of fuel-efficient food preparation, including two of the following:

- prepare a simple salad with one unusual ingredient
- quick-roast some seeds (e.g. pumpkin, sesame, sunflower) in a little oil, using a fuel-efficient stove
- to reduce fuel use, show participants how to make and use a grass basket cooker to finish cooking food started on a fuel-efficient stove (see page 25).
- stir-fry a variety of sliced vegetables on a fuel-efficient stove.

After this session, serve a meal that includes demonstration foods to show that a 'better meal' is tasty and satisfying - even with less 'staple' to eat!

Module D:
Sustainability and starting behaviour change

Activity D1:
Worship and review

Aims: Worship and review.

Description: Bible study in mixed groups followed by review of Module C.

Time needed: 30 minutes.

Act of Worship

Invite someone to lead a song of thanksgiving for food and the gift of life.

Divide into three mixed groups (any age or gender) for a Bible study. Give each group a different reading to study and pray through, for 15 minutes, followed by sharing and prayer in the large circle. The Bible passages are:

Genesis 1:27-31

Matthew 6:25-34

Revelation 21:22-26 and **chapter 22:1-4.**

Ask if, as Christians, we have a responsibility to look after the land for future generations, or whether we should concentrate on feeding ourselves and increasing our incomes today?

Review of module C

In the large circle, ask someone to define 'food'. What is a staple food? What are 'nutrients' and why are they important? Which nutrients are most often lacking in our diets? How can we turn an 'ordinary meal' into a 'better meal'?

Activity D2:
Who do we farm for?

Aim: To answer a key ethical question: "Are farmers responsible for the productivity of the land they hand on to their children?"

Description: Peer group discussions followed by plenary session reports and decision-making.

Time needed: 30 minutes.

Directions:

1. This session will address two very important questions, namely: "Do we plan and look after our farms just for today and next year?" and "Are we responsible for the productivity of land that we hand on to our children?" Write these questions on a flip chart, placed where everyone can see it.

2. Move into peer groups to answer the two questions, and also to discuss three consequences that follow. For example, "we need to farm in a more sustainable way..." or "we must think about how to make better use of 'grey' water". The groups should record their responses on flip chart paper.

3. Return to the large circle for reports, and invite comments. Try to reach agreement amongst everyone. Find out which vernacular words best express 'sustainable farming' and

Do we plan only for ourselves now or for the future and our children?

write them, with the group decisions, on a poster that stays on the wall for the rest of the workshop.

Note for facilitators: In two workshops in Malawi, farmers agreed that "we are responsible for the land we hand on to children and grandchildren. We shouldn't sell our land but improve and guard it" and "we must teach children habits of hard work and farming skills". Both grandparents and young people emphasised the importance of planting trees and legumes, and protection against erosion and loss of bio-diversity - using that term!

Activity D3:

Sustainability and forest gardens

Aim: To encourage participants to imagine the Garden of Eden, in preparation for 'positive dreaming' about their own gardens and farms.

Description: Work in peer groups.

Time needed: 30 minutes.

Directions:

1. Starting in the full circle, explain that we are going to imagine what the Garden of Eden was like, and to draw it, to help us to 'dream good dreams' about our own gardens.

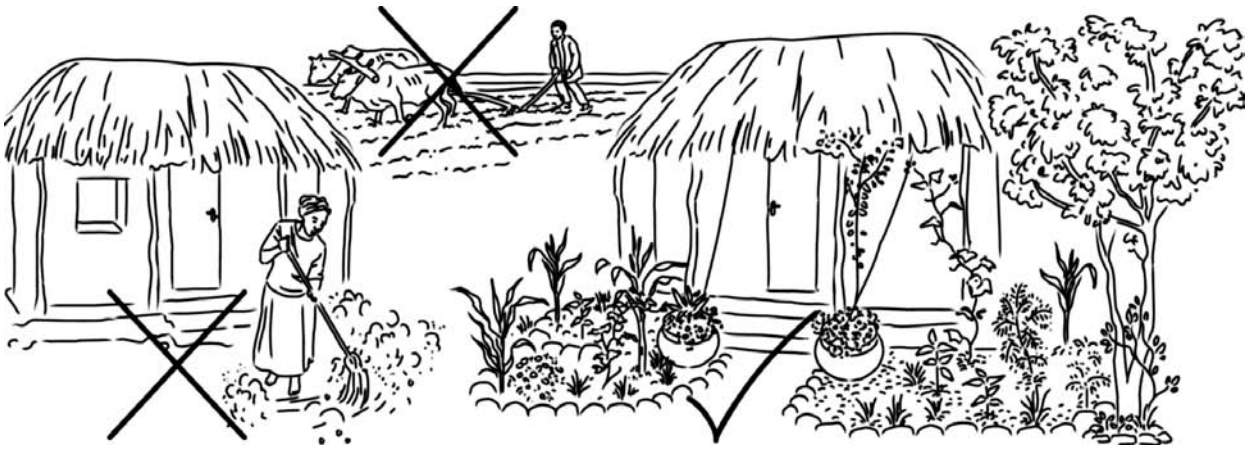
2. Read out the following questions, slowly, over about 3 minutes:

- "Does the Garden of Eden contain only one kind of plant, or many different kinds?"
- "Are there few - or many - trees?"
- "Is the soil bare, or covered? If covered, what with?"
- "Is the soil moist or dry, and do you see a pond or river?"
- "Are the plants flat, like a field, or on several different levels, like a forest?"
- "Is the Garden of Eden beautiful? What do you like most about it?"

3. Now break into peer groups, and invite each group to imagine what the Garden of Eden was like, and to draw it.

4. After 15 minutes, return to the large circle to see drawings, which should be spread out on a table or on the floor. Invite questions and comments.

5. If time is short this activity can be done as individual 'homework'.



We need to change before we destroy our soil.

Activity D4:
Behaviour change is a process and we can all do it!

Aim: To revise the process of behaviour change and to confirm that change is possible for everyone.

Description: Brainstorming in a large circle.

Time needed: 15 minutes.

Directions:

1. Using a flip chart, introduce the participants to the "six stages of behaviour change" (as described in Section 4, pages 27-29).

Ask if we have started 'agricultural behaviour change' yet.

2. Ask: "What have we done already through this workshop?" (awareness raising)

Ask: "What is the next stage?" (dreaming hopeful dreams)

Ask: "Have we started that stage yet?" (Yes, in the last activity - Activity D3.)

Participants may say that they have already changed their farming behaviour so now they are starting a second round of change. If so, offer congratulations and encourage new ideas.

Tea-break (15 minutes), with alternative 'teas' and snacks.

Activity D5:
More new ideas

Aims:
1. To introduce the idea that 'edges of plots' and their centres should be planted differently.
2. To challenge traditional land-use practices and introduce 'zero-tillage'.

Description: Plenary discussion.

Time needed: 20 minutes.

Directions:

1. In the large circle, draw a square field on a flip chart. Ask for local words for the 'edge' and the 'centre', and write these on the drawing. Ask if people plan to grow different plants in these two areas. The answer may be 'no', or that a live fence will be made to enclose the plot. If a 'live fence' is suggested, ask what this means. Through questions and answers, explain the advantages of a 'live fence': plants and trees form a permanent boundary that doesn't need to be replaced each year, which also

supplies some human, animal and plant needs (e.g. food, fodder, nitrogen fixation), as well as protection from wind, thieves and large predators.

2. Find out how paths are planned - and used - to limit damage to soil from human feet and heavy machinery.

3. Finally, ask what 'zero' or 'minimal tillage' means, and whether anyone has tried it. (The words may be unknown, and it is unlikely that anyone will have tried it.)

4. End this activity with a vigorous 'follow-my-leader' two-minute energiser.

Activity D6:
Better yields from less effort

Aim: To critically examine daily activities before discussing behaviour change.

Description: Work in peer groups and role plays.

Time needed: 45 minutes.

Directions:

1. We shall now use our new understanding of natural resources and processes to look thoughtfully at our daily activities, to ask if they are indeed useful. If an activity is not useful, could we use our time and energy more profitably?

2. Break into the usual peer groups. Ask groups to draw a vertical line down the centre of a sheet of paper, labelling the left side 'activities' and the right 'reasons to change'. Ask each group to brainstorm quickly a list of daily activities and to write these on the left-hand side. Then, more slowly, they should discuss whether or not each activity is a good use of energy and time. If a particular behaviour is not essential and 'profitable', they should underline it and agree on one reason to change, which they write on the right-hand side.

3. After 20 minutes, ask each group to choose one activity they would most like to change. Then they should prepare a 3-minute role play to show half the group making that change, and the other half agreeing - or disagreeing - with the new behaviour.

4. In the large circle, each group presents its choice of an 'unprofitable' activity, before everyone watches all four role plays. Invite comments and discuss choices.

If disagreements are expressed, remind everyone that we agreed to listen respectfully, even to wild ideas! In the past, people laughed at men who suggested flying, or women who wanted to vote. Yet today, many people fly and women in most countries are allowed to vote.

In this activity, men may not limit their list to work but may also include leisure activities, such as drinking beer or gambling. In contrast, women will probably list work activities starting before dawn and ending late at night - all considered absolutely essential!

At one workshop in Malawi, men listed 'charcoal burning, drinking beer and gambling' amongst their daily activities, but decided that all three waste resources and time needed for productive work, so they should stop! The women looked pleased, as beer-drinking and gambling often lead to domestic violence.

5. Finally, ask the participants how they feel about this activity. Do they feel tired and anxious, or energetic and hopeful? Ask everyone to go on thinking about today's activities and the feelings that resulted.

6. Thank people for their part in a challenging session. Stand up and finish with a song of thanksgiving.

Module E:

Designs for better living and learning new skills

Note for facilitators: This and later modules need assistance from experienced people who have practised permaculture, organic or conservation farming for at least one year.

Activity E1:

Worship, while questioning traditional values with Jesus

Aim: To question cultural understandings of 'clean' and 'not clean' behaviour, and 'laziness' and 'hard work', in the context of Jesus questioning his own society's values – and ours.

Description: Peer group Bible studies, plenary discussion and prayer.

Time needed: 45 minutes.

Directions:

1. Start by singing a new song.

2. Move into peer groups, giving each a different reading:

Grandparents: **Matthew 13:24-30**
Women: **Luke 10:38-42** and **Luke 6:1-5**
Men: **Mark 7:1-23**
Young people: **Luke 6:6-11**.

3. Ask each group: "Would Jesus' words and actions have shocked - or pleased - the ordinary people who were present? Explain the reasons for your decision."

4. After 10 minutes, ask each group to imagine a 'word' or 'behaviour' from Jesus, today, in response to one activity typical of 'our culture' in our community. What does Jesus say and do?

5. After another 10 minutes return to the large circle. Each group reports in turn, followed by a brief discussion about challenging established 'cultural' meanings for 'clean' and 'dirty', 'lazy' and 'hard- working' behaviour.

6. Finish with a prayer for wise discernment as we question our 'culture'.

Review of module D

In the large circle, ask someone to explain why we decided to farm 'for the future', not just for today. Does 'farming for the future' demand that we change traditional farming methods? What changes do you suggest?

Activity E2:

Designing our land for a hopeful future

Aim: To use new knowledge, and personal and communal visions to question local values about land use around village homes.

Description: Plenary discussion and individual work.

Time needed: 60 minutes.

Directions:

1. In the large circle, review new ideas that can guide 'planning for change' at family level, writing notes on a flip chart. We now:

- ✶ Understand better our resources and natural cycles (air, water cycle, soil, trees, plants, animals, energy flow, soil nutrition and wastes)
- ✶ Know how to change behaviour and that 'we can do it, too!'
- ✶ Accept Gospel values that support sustainability (people first, soil second, live within limits and avoid waste)
- ✶ Know principles of permaculture (everything works together)
- ✶ Know we can question and change cultural values and practices.

2. Ask people to move into family or 'nextdoor-neighbour' groups to design realistic changes they would like to make at home, around the house, in the next 12 months, reporting with a drawing. (There will probably be five or six groups.) Remind them to plan for 'edges', and the use of bare soil and access paths. Emphasise that everyone - grandparents, women, men and young people - should contribute ideas. Everyone taking part must accept a share of the work needed, which must be 'achievable' in 12 months.

Admit that this activity is challenging, but say that experienced people will be around to help with suggestions.

3. Give each group a marker pen and two sheets of paper - one for rough notes, and one for the finished plan. Allow 40 minutes, then return to the large circle to look at three plans, using those judged most realistic by the experienced assistants.

4. Congratulate everyone on their first attempts to design for a better future. 'Designing' will get easier with practice!

Tea break (15 minutes) with home-grown alternatives and snacks.

Activity E3:
Re-using 'grey' water

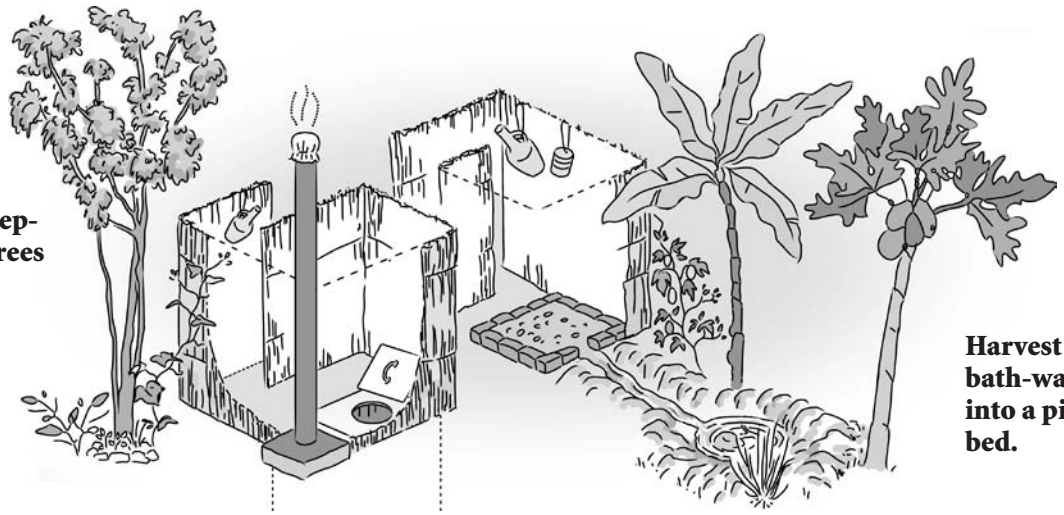
Aim: To identify sources of 'grey' water that are wasted in daily life and to learn safe ways to re-use this resource.

Description: Discussion and demonstrations.

Time needed: 30 minutes.

Directions:

1. In a large circle, say: "Most people don't notice how often they use water at home each day, and then throw away what's left - unused!



We call this 'grey' water." Brainstorm sources of 'grey' water available at home (washing hands before meals, bathing, washing dishes or clothes, mopping floors, washing vegetables, fruit, fish, maize.) List these on a flip chart.

Use every drop of water. Grow food everywhere.

2. Ask: "What happens to run-off from borehole pumps, water round bath houses and under dish racks? What are the disadvantages of ignoring 'grey' water?" (Mosquitoes breed in stagnant water, mud, wet shoes and feet.)

Ask: "How can 'grey' water be cleaned before re-use?" (Allow it to settle and skim off soap and dirt, or pour it through sand in a basket in a vegetable bed.)

3. Divide participants into groups of four to plan how to harvest and use 'grey' water.

4. After 10 minutes, return to the large circle to discuss ideas, including planting plans. (See Section 7 on mixed planting.)

Activity E4:
Raised, key-hole, and container beds and mulching

Aim: To learn about sheet mulching and cover crops, and how to make useful vegetable and herb beds.

Description: Group discussion and demonstrations.

Time needed: 45 minutes.

Directions:

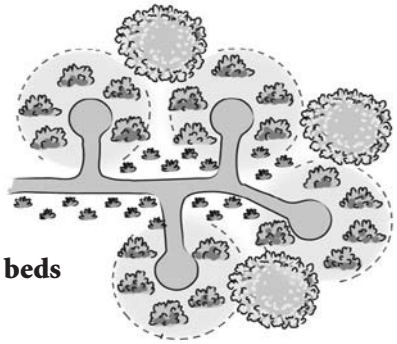
1. In the large group, describe how 'mulching' and 'cover crops' keep soil covered to:

- Help rain to soak in and to reduce water losses by evaporation
- Cool soil surfaces
- Suppress weeds
- Add organic matter to improve soil quality.

List dead vegetable materials (e.g. banana leaves, legume leaves, rice husks) to use for mulch. Identify useful live cover crops (e.g. groundnuts, sweet potatoes).

2. Divide people who live in villages from those who live in towns.

One instructor shows **village dwellers** how to make and plant pit beds and key-hole beds: a short central path with beds either side leading to a small round garden where heavy-feeding plants (pumpkins or squash) grow.



Key-hole beds (plan).

A second instructor shows **town-dwellers** how to make container or raised beds (using old tyres, wood, bamboo or strong sacks) and choose suitable plants to grow (e.g. climbers, salads, herbs, tomatoes, green beans, garlic), and how to use 'grey' water and kitchen waste.

Activity E5:
Reclaiming compacted soil by sheet mulching

Aim: To discourage ploughing and digging, and increase understanding of the causes and effects of compacted soil.

Description: Plenary discussion and group work using a 'problem tree'.

Time needed: 30 minutes.

Directions:

1. In a large circle, draw a tree on a flip chart. Explain that the trunk represents a 'problem', in this case compacted soil. The roots (hidden in the ground) represent 'causes' and the branches represent effects or consequences of compacted soils.

Invite participants to suggest causes of soil compaction, and write these alongside the roots. (Pressure from feet or heavy tools, heavy rain, bare soil, cultivating wet soil, burning crop residues.) Then ask for effects of compaction. (Rain and roots cannot penetrate easily, loss of soil 'livestock', organic matter and air, erosion.) Write these effects alongside branches.

2. Divide into peer groups and give each a different question (5 minutes):

Grandparents: was soil compaction a problem 30 years ago? If so, how did you deal with it?

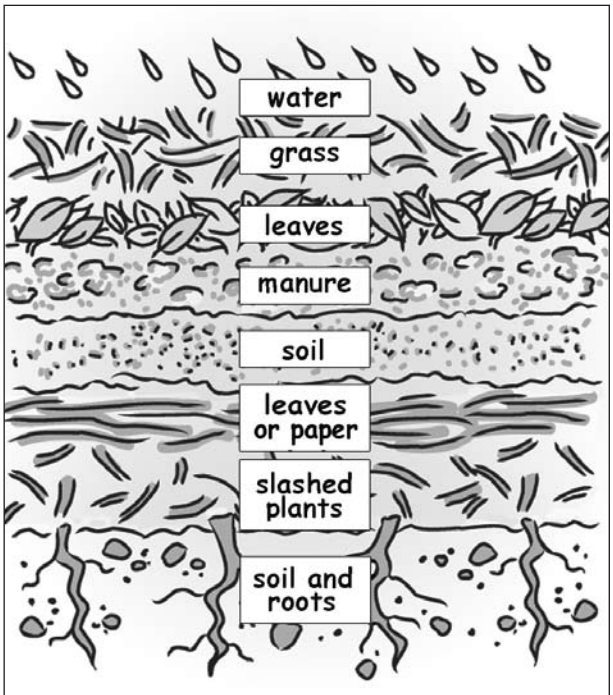


Figure 12: Making a sheet mulch to reclaim compacted soil.

Women: How can you **prevent** soil compaction?

Men: How can you **correct** soil compaction in a field or around a village house?

Young people: invite criticism of the 'problem tree' analysis and fresh ideas about soil.

3. Return to the large circle for reports and a discussion.

4. Ask:"How would you prepare your land for planting by zero-tillage?" (Sheet-mulch after the harvest - see Figure 12, above. Then dry-plant seeds into small holes in the mulch in October, before rain is expected.)

Ask: "How would you demonstrate, to your own satisfaction and to convince critics, that such strange 'farming behaviour' actually works?" (Practice on compacted land round your home, then prepare three-quarters of your rain-fed garden in the usual way, but prepare the other quarter by zero-tillage and dry-planting, then compare yields at the harvest.)

Module F:

Managing water and improving soil

Notes for facilitators: For this module (as for Module E), you will need trained assistants. For groups of 20 or more people, divide participants into two sub-groups and run Activities F3 and F4 at the same time, twice, changing over half-way through.

Collect buckets, water, sticks, old sacks, empty milk or beer cartons, animal dung, and amaranthus or other suitable leaves for making liquid manure. Prepare straight 2-metre poles, nails or strong string, and stones for making A-frame levels and plastic or glass bottles for drip irrigation, in quantities suited to numbers of participants.

Before this session, dig a demonstration swale three metres long at the meeting place, for participants to see and use A-frames to show that the base is level - as it must be. Have vetiver grass or lemon grass ready to plant on the ridge.

Activity F1:

Water in the wilderness

Aims: To focus attention on care of water resources.

Description: Worship and review of Module E.

Time needed: 30 minutes.

Directions:

1. In the large circle, sing a hymn or chorus about Jesus as 'living water', who satisfies all our needs. God is concerned about our physical as well as our spiritual needs, but God dislikes waste - and so should we.

2. Move into peer groups for Bible study:

Grand parents: **Exodus 17:1-7; Isaiah 35:1-7**

Women: **John 4:5-15**

Young people: **John 2:1-11**

Men: **John 7:37-39, Revelation 22:1-2**.

3. After 15 minutes return to the large circle for reports. Ask: "Does God take our need for water seriously?" (In workshops in Malawi, the answer was invariably 'yes!'.)

Ask also: "Do we take our responsibility to care for water sources equally seriously?' (At a workshop in Malawi people said: "Not in the past, but from now on - yes!")

Ask: "How do we use water in worship?"

4. Finish by sharing another prayer or song about 'living water', essential for physical life and spiritual life.

Review of module E

Ask: "What is 'grey water'? What are the advantages of 'designing' how to use our land?"

Activity F2:

What we know already about water

Aim: To revise knowledge of water management on slopes and around water sources (e.g. taps, wells, borehole pumps).

Description: Rapid brainstorming in a large circle, while making two posters.

Time needed: 30 minutes.

Note for facilitators: For this activity you will need **two flip charts** for notes and have Figure 5 (page 35) on a wall, where everyone can see it.

Directions:

1. Ask: "Where is rainwater stored?" (As ground water; in plants; and as surface water in wells, springs, rivers and lakes). On the **first** flip chart draw clouds and rain falling onto a steep slope leading to a lake, with an almost-empty well on the slope (see Figure 9, page 57).

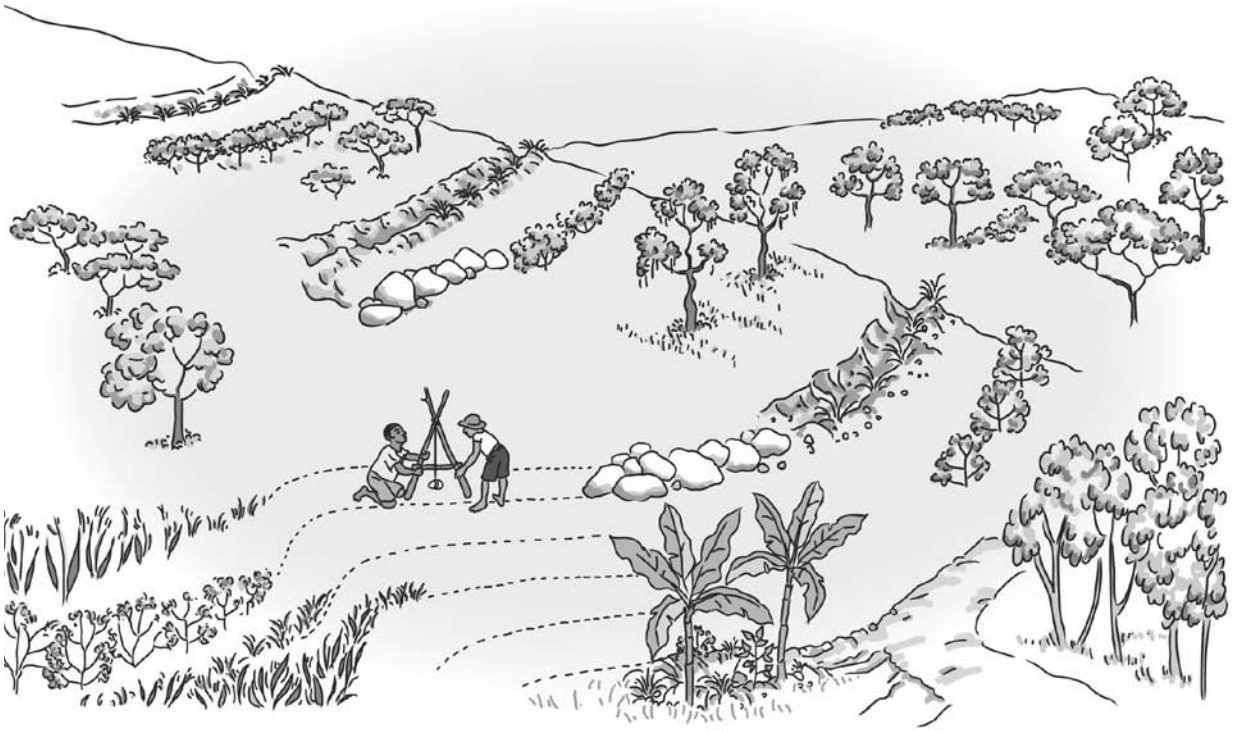
Ask: "Why is storage as groundwater or in plants better than storage as surface water?" (Less loss from evaporation, more water in wells and springs, and filtration of water by soil.) Raise the water level in your drawing of the well and add trees to the slope.

Ask: "How do trees influence the water cycle?" (Leaves break the force of rain, water soaks into the soil around roots, and transpiration from leaves returns water to the clouds. Also, fallen leaves shade soil surfaces.) On the flip chart, raise the water level in the well again, add groundwater around it and a stream flowing into the lake.

Ask: "What happens to rain on slopes with no trees or plants?" (Heavy run-off of water and soil erosion.)

Ask: "How can we prevent run-off and soil erosion on slopes?" (By placing rows of stones, by planting hedgerows and other plants, or digging trenches across the slopes to control and slow the flow of rainwater.)

2. Say: "We can summarise how to manage water resources more effectively, by recalling the six 'Ss' (see Section 6, page 33). Write



Using swales, hedges, stones and plants to prevent run-off and soil erosion.

this list on the **second** flip chart, and refer to the swale diagram (Figure 5) on the wall.

Ask: "What is a swale?" (A level, permanent drainage trench dug across a slope, along a contour line. The soil dug out is piled into a large ridge on the downhill side. The ridge is stabilised by planting it with vetiver grass or another cover crop.)

Tea break (15 minutes) - remember healthy snacks and home-made alternatives to tea.

Activity F3:
A-frames and swales

Note for facilitators: For this activity the groups should consist of no more than 20 people.

Aims: To teach participants how to make and use A-frame levels to mark contours across slopes, and to examine a prepared swale.

Description: Demonstration by an experienced assistant of how to make and use an A-frame level, followed by an opportunity for participants to practice.

Materials needed: Three sets of materials: poles, long nails, string, half-bricks, pencil or marker pen. Prepared handouts on A-frame levels (using information on page 34-35).

Time needed: 45 minutes.

Directions:

Note for facilitators: To review how to make and use an A-frame level, please see Figure 4, page 34.

1. The assistant demonstrates how to make an A-frame level, explaining each step in the process.

2. Ask sub-groups of four or five people to make their own A-frame levels.

3. The assistant demonstrates how to mark out a contour on a slope, using an A-frame level, and participants practise this skill.

4. Encourage and answer questions. Discuss how to decide where to make the first swale on a slope. Explain how to vary the width and depth of trenches and the distance between swales, depending on how steep a slope is.

5. Provide handouts of 'Making an A-frame level: Steps 1 to 8', including Figure 4.

Note for facilitators: Remember that there is no substitute for reassurance, from experienced people, that preventing run-off and erosion on slopes really does preserve soil and improve yields. Emphasise that the hard work is done only once. After that maintenance is easy but benefits continue.

Activity F4:
Preparing soil for crops and using water and liquid manures

Aim: To improve care for soil and use of water.

Description: Outdoor discussion-demonstration of preparing soil for planting and methods of watering; making compost and liquid manures.

Materials needed: Plastic or glass bottles, water, watering cans, bucket, animal dung, amaranthus leaves, sticks.

Time needed: 45 minutes.

Directions:

1. Go outside to consider different ways to prepare soil for crops. Start with digging, ploughing and making ridges. When are these tasks usually done? (After the first rains.) Does late digging and ridging delay planting seeds? (Yes.) What effect does this have on crop yields? (It reduces yields.)

2. Ask: "Why dig at all?" People are astonished and say "To remove weeds and rubbish, and to break up the soil for seeds". Explain that more and more farmers are discovering that digging soil actually reduces its productivity - for two reasons. First, natural spaces in soil are broken down, and secondly, 'soil-friendly' organic matter is mixed with air and turned into carbon dioxide without being used as food for soil first.

Watering plants with an inverted bottle, and using leaf mulch.

3. Explain that there are two different ways of preparing land which allow seeds to be planted earlier, to improve yields and heal damaged soil.

Conservation farmers make 'planting basins' during the dry season - but only where seeds will be planted later, when the rains start. Demonstrate depth (about 10 cm) and spacing (20 cm) of the basins, while explaining the advantages (less work, longer growing season and higher yields).

Permaculture farmers don't dig at all, but prepare land with a deep sheet-mulch spread onto soil soon after the last harvest. The mulch includes crop residues, leaves, grass, termite mound dirt, compost and manure. Before rain is expected, they make small holes in this mulch, where they plant and cover the seeds. The advantages are even less work and lower costs. Dry-planting also gives seeds the longest possible growing season, while a deep mulch keeps light away from weed roots, so fewer weeds grow.

3. Discuss how to water crops, offering suggestions: a good soak three or four times a week onto soil around the roots, late afternoon or early morning.

4. Show how to water plants in containers with inverted glass or plastic bottles and how to place a 1-metre watering pipe in the planting hole alongside tree roots. Let participants practice and remind them to use 'grey' water when available.

5. Ask how people use animal manure. (Manure should not be used fresh but only after 'maturing' - covered for at least two weeks to prevent loss of nutrients into the air.) This reduces the transfer of weeds and pests.

6. Discuss ways to feed growing plants that look 'hungry' (yellow leaves or slow growth). Show how to make liquid manure from animal dung and teach different dilutions to use for seedlings and vegetables (Section 6, page 37). Demonstrate mulching around plants and emphasise reasons for covering soil surfaces.

7. Show how to make liquid manure from leaves of plants, and teach correct dilutions for seedlings and vegetables (Section 6, page 37).

8. Emphasise that human (or animal) urine contains urea, a natural fertiliser. Human urine can be collected and diluted as a cost-free 'feed' for growing crops - or to get rid of termites.

9. Provide handouts (from Section 6) about the methods taught.

Module G:

Companion planting and free fertiliser

Note for facilitators: For this module (as for Modules E and F), you will need one or two experienced assistants to share their knowledge.

You will also need one A-frame level.

Make photocopies, for handouts, of the 'Plant companions and enemies' list in **Appendix ii**.

Activity G1:

Worship and review

Aims: To emphasise human dependence on God and each other for support and protection.

Description: Reflection and review.

Time needed: 20 minutes.

Praise and worship

If the group has written a new song ask them to sing it. Otherwise sing 'All creatures of our God and King'.

In the large circle, read out **Psalm 139**. Pause for a minute or two of silence, then ask what the psalm teaches us about the detail of God's care for human beings. Does the New Testament support this Old Testament view? (For example, "Every hair of your head is counted", and "You are worth more than many sparrows".)

Ask: "Do we value the care and support we receive from one another, as well as the care we receive from God?" Ask for examples of community support in our lives. Encourage a song of thanksgiving for support, or a short prayer about caring for one another. End with two or three minutes of silent worship.

Review of Module F

In the large circle, ask someone to describe or draw a swale. Invite a different person to describe how to mark out a contour, using an A-frame level. Ask who has used these methods, already, to reduce erosion? Remember that testimony from participants carries more weight than anything a workshop leader says!

Brainstorm about ways of improving soil quality and structure. Make sure 'no digging' is given attention and praised.

Activity G2:

Plants and animals need community support

Aim: To introduce the idea that plants and animals need support and protection, which farmers should provide.

Description: Whole group activity followed by discussion in peer groups.

Time needed: 45 minutes.

Directions:

1. Ask people to stand up, move around, and then to stand with three or four people who have 'supported' them in some way in the past.

2. Now ask these small groups to divide to one or other side of the room. Those who received 'support to do something we couldn't do alone' stand on the left, and those who were 'protected from a threat', to the right. Which activity, 'help' or 'protection', was needed most often?

3. Comment that plants and animals need the same two basic kinds of support. If we meet their needs we are rewarded with better yields and healthy, contented animals. Like people, crops are best raised in small communities called guilds. In a guild, our crops have natural supporters and protectors which work free of charge, so we should take advantage of these.

Plants need companions and protectors.

4. Ask the participants to move into peer groups. For this activity we think about the needs of plants only.

5. Ask the groups to divide a sheet of flip chart paper halfway down, and at the top to list kinds of 'support' that all plants need, and below, examples of 'threats' from which plants need protection. They should be specific, basing examples on experience.

6. After 15 minutes, bring the groups together again and compare ideas. Are some suggestions common to all four groups? Display flip chart sheets on the wall for the rest of the day.

Tea break (15 minutes), with alternative snacks and drinks.

Activity G3:
Free fertiliser!

Aim: To reinforce the idea that well-made compost is better than artificial fertiliser, and to introduce agro-forestry plants.

Description: Brainstorming in the full circle, then work in peer groups.

Time needed: 30 minutes.

Directions:

1. In the large circle, brainstorm about ways of improving soil productivity and structure: no digging, more mulching, compost and liquid manure as top-dressings, legumes to fix nitrogen from the air. If legumes are not mentioned, ask: "Can plants make their own fertiliser, for free?" Have ready a small legume, carefully dug (not pulled) up, so that the root nodules of 'friendly

bacteria' are visible. Draw attention to the nodules: What they are? What do they do? Point out that 'legumes' are a large family of plants and trees, of different sizes, that can be recognised easily, then ask "How?" Have ready pods from several legumes that people are likely to recognise, and invite identifications.

2. Send participants into peer groups to list different ways of using legumes to improve soil. After 10 minutes return to the large group to share ideas. Praise suggestions that material from legumes should be included in compost heaps.

Maize stalk borer moths can't identify maize planted with beans or sunflowers!

Activity G4:
Integrated pest and disease management

Aim: To discuss and demonstrate natural methods for pest control.

Description: Discussion of general, specific and supportive strategies for sustainable pest and disease management, and demonstrations of how to make natural herbal pest sprays.

Materials needed: Hot chillies (¼ kg), two litres of soapy water, pestle and mortar, two handfuls of tephrosia or neem leaves.

Time needed: 45 minutes.

Directions:

1. In the large circle, with a flip chart ready, ask for **general ways** to reduce problems from pests and diseases (see Section 7). Write responses on the flip chart. Ask which pests and diseases farmers fear most. Emphasise that healthy soil grows healthy plants.

2. With a new sheet of paper, ask for examples of **specific strategies**, linking each to specific pests or diseases, and write the responses on the flip chart.

3. Explain that now we shall prepare to deal with an outbreak of aphids in our garden or fields. Divide participants into two mixed groups of 10 to 15 people. Have two experienced demonstrators and materials for two parallel demonstrations (change over groups after 20 minutes) of how to:

- make and use two natural pesticide solutions, e.g. one made from chillies and one from neem or tephrosia leaves
- choose and space 'protector' plants for important crops.

At the end of this activity, distribute handouts listing 'companion planting' (**Appendix ii**) and 'protector planting' combinations (Section 7, page 38), and giving recipes for natural pest solutions (page 40).

Activity G5:

Preview of final practical workshop

Aim: Preparation for final workshop, Module H.

Description: Plenary discussion before and after consultation in peer groups.

Time needed: 20 minutes

Directions:

1. In a large circle, remind participants that the next meeting will be the last, so it is important. We shall discuss how to continue learning about sustainable farming and living, and how to support one another in the future. We shall also talk about special skills that farmers can learn, to increase professional satisfaction, meet local needs and earn a better income. There are too many skills to describe in a single session, so we shall choose from three possibilities (have these ready on a flip chart):

a) **Better seeds and seedlings:**
selecting, collecting and storing seeds, **or** tree and plant nurseries, **or** propagation of plants by grafting.

b) **Different crops or livestock:**
growing and using herbs for medicines, essential oils or cooking, **or** fish-farming (aquaculture), **or** bee-keeping for honey.

c) **Fuel efficiency and adding value to crops:**
making and using fuel-efficient clay stoves, **or** drying fruit and vegetables and making jam.

Work in peer groups for 10 minutes to make one choice per group from each category (a, b and c).

2. Return to the large circle and negotiate three choices - one from each category - that please most people. Then challenge participants to find out, for themselves, as much as they can about 'special skills'. **You must** find local experts to talk briefly about chosen subjects at the final meeting.

A fuel-efficient clay stove.
(Based on a photograph supplied by Concern Universal.)

Module H:

Farming for the future

Note for facilitators: It is important for this final workshop to be enjoyable. Keep worship at the start brief, to leave time for thanksgiving and a nutritious but festive meal later. Provide each participant with a gift for his or her family. This should offer food-enjoyment now, plus some long-term benefit, for example, fruit with seeds to plant, or nutritious biscuits plus a sturdy tree seedling (with instructions for care).

Have sets of handouts ready, to replace any that participants may have lost. Ask an assistant to check that your list of participants' names and addresses is complete and correct.

Ask people who lead 'special skills' activities to bring demonstration equipment or materials with them, but offer help with transport. Ask each 'specialist' to give you one A4 sheet of notes for a handout about their special skill two weeks in advance, and make one copy for each participant.

Choose someone with a gift for celebration and liturgy to lead worship at the end of the workshop and plan celebrations together: presentation of certificates and family gifts, a group photograph, a meal, singing, dancing and thankful worship. Find any special equipment needed and make sure that it works.

Activity H1:

Thanksgiving and worship

Aim: To enlarge people's visions as the workshop ends.

Description: Peer group work and review of Module G.

Time needed: 20 minutes.

In the large circle, sing a worship song, preferably one the group has composed.

Move into peer groups for five minutes, to choose two insights or experiences from the workshop for which they, as a group, want to thank God.

Return to the large circle and share 'thanksgivings' in turn, writing notes on a flip chart, to display on the wall. If 'silence' is not mentioned, say that you hope people enjoyed times of silence, which help us to listen to God and to one another.

Review of Module G

1. In a large circle remind participants of the challenges you offered last time. Ask for their thoughts about how to manage **life-long learning** and how to support one another in the future. Listen to ideas, and write them onto a flip chart.

2. Invite comments from silent members and promise time to discuss plans later.

3. Ask if anyone has learned something about **special skills** that would add interest and

income to farmers' working lives. How was the information obtained? By talking with 'experts', reading, or watching people at work? List skills for which you have arranged speakers. Everyone will be able to sample two different 'skills' later today.

Activity H2:
Integrating small animals into farming

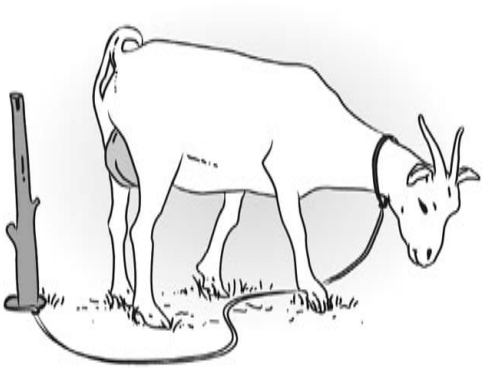
Aim: To teach the benefits of keeping animals for diversity and productivity.

Description: Plenary discussion.

Time needed: 15 minutes.

Directions:

In a large circle, with a flip chart ready, brainstorm 'good reasons for keeping animals'. Make sure that links between the needs and outputs of specific animals and specific crops are mentioned, and that participants understand that animal dung is important for making good compost. Emphasise that hens and ducks help with pest control. List reasons for preferring small animals, but do not make negative statements about cattle.



Activity H3:
Learning is for life!

Aim: To reinforce the idea that learning should continue – and to decide how the group will achieve this.

Description: Plenary discussion followed by work in mixed groups.

Time needed: 30 minutes.

Directions:

1. In a large circle, brainstorm "reasons for continuing to learn" followed by suggestions about how to do so. Write ideas on a flip chart, without comments. Participants discuss these ideas in mixed groups for 10 minutes.

2. Rejoin the large circle to hear suggestions. If people want more meetings, ask "How often?", "Where will you meet?" and "What will you do?" Write the answers on the flip chart.

3. Point out that we should not make important decisions too hastily, and that leaders (more than one) will be needed. We shall make better decisions about what to do next if we return to this choice later - after doing something quite different for an hour.

Tea break (15 minutes) with snacks to maintain energy.

Activity H4:
Specialist skills for enjoyment and income

Aim: To demonstrate two or three special skills that can be taught by local practitioners, to widen participants' visions.

Description: Brief plenary discussion, followed by demonstrations by skilled practitioners of skills

that generate income. Participants meet in small groups, which change over after 25 minutes.

Time needed: 1 to 1½ hours.

Directions:

1. In the large circle, explain the choice of 'special skills' demonstrations on offer and where each will take place. Emphasise that these are 'taster sessions' intended to encourage interest, not to provide all the knowledge and experience needed for long-term success. Explain arrangements for change-over after 25 minutes.

2. Participants move into mixed groups for demonstrations and receive a handout - before changing to another demonstration after 25 minutes.

Activity H5:
Farmers as local leaders and Kingdom citizens

Aims: To make realistic plans for mutual support and learning.

To choose leaders to implement plans.

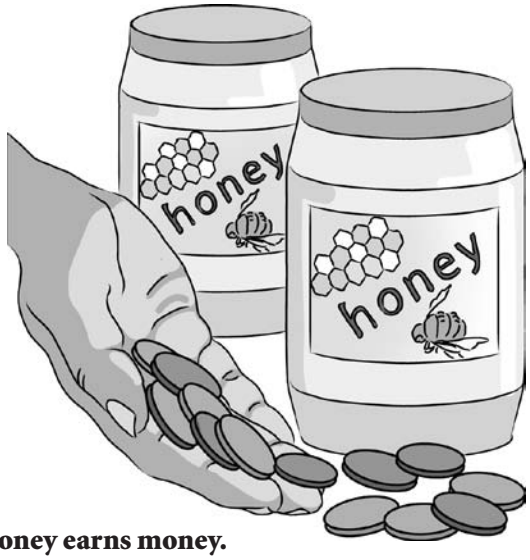
To present 'local farmers' groups' as partners in continental and global networks of 'change-makers for a sustainable future'.

Description: Plenary discussion followed by work in peer groups and final plenary.

Time needed: 1 hour.

Directions:

1. In a large circle, with flip chart ready, invite realistic suggestions for "What shall we do next?" Write these up, then ask people to move into peer groups for five minutes.



Honey earns money.

2. Ask each group to choose the two suggestions they think are most practical, and to suggest the names of **three leaders** (from the larger group) who will work together to implement plans for the first year. Say that it is good practice for leadership to change regularly, so many people learn how to lead and no-one dominates.

3. After 5 minutes, return to the large group to listen to 'action' and 'leadership' suggestions. You, too, should be ready with potential leaders' names, which you have discussed in general terms with the persons concerned, and with traditional and religious leaders. Follow local custom about decision-making (consensus or vote) to reach a decision that pleases most people, and acclaim the chosen 'leaders for this year'.

4. Ask people to move into peer groups, for the last time, for 10 minutes of discussion about "how we farmers matter here, where we live, in our country, in Africa, and in the wider world". Each group should have one sheet of flip chart paper already divided into four quarters, labelled 'here', the name of your country, 'Africa' and 'the world'.

5. Return to the large circle to listen to responses and for a brief discussion. Encourage the participants to see themselves as change-makers in their local

The Holy Spirit empowers change in our lives.

community, ready to lead by service and example, like Jesus, not by dictatorship.

6. Remind everyone that the Holy Spirit brings together a great variety of people of good will, not just known 'believers'. Suggest reading the Acts of the Apostles to see how often the Holy Spirit took the initiative in the early Church; suggest praying for willingness to watch for and cooperate with the Holy Spirit's (often surprising!) initiatives today.

7. Finish by asserting that we 'ordinary people' - whether part-time or full-time farmers - don't have to wait for governments or 'experts' to tell us what to do. (They might not do so soon enough!) We already know that, if we cooperate, humbly and thoughtfully, with the gifts and processes of creation, as citizens of the coming-Kingdom-of-God, we can grow more and better food. Then we will enjoy life more, and pass on a sustainable and better world to our children.

8. Say "Let's celebrate!" and hand over to the person chosen to end the meeting and to introduce the meal.

Appendix i:
Selected organic farming resource organisations in Africa

Country	Organisation name	Address	Phone	Email
Botswana	Permaculture Trust of Botswana (PTB)	P.O. Box 31113, Serowe	+267-463 2428	permclt@botsnet.bw
Cameroon	Better World Cameroon	P.B. 30809, Yaounde	+237 778 91580	foundation@betterworld-cameroon.com
Ethiopia	MELCA Mahiber	1519 code 1250, Addis Ababa	+251 115 507 172	melca@ethionet.et
Ghana	International Permaculture Ghana	P.O. Box TM 390 Techman, Brong Ahafo Region	+233 243 702 596	pyeboah@international permaculture.com
Kenya	Manor House Agricultural Centre	Private Bag Kitale 30200	+254 20 355 0698	mhac@africaonline.co.ke
Kenya	Kenya Organic Agriculture Network	P.O. Box 7246, Nairobi	+254 20 261 0863	koansecretariat@elci.org
Lesotho	Berea Agriculture Group	P.O. Box 572 Teyateyaneng 200	+266 589 48772	
Malawi	**Rescope Programme**	**P.O. Box 32280, Blantyre 3**	**+265 1 831 373**	**rescope@ seedingschools.org**
Namibia	Integrated Sustainable Land Management (ISLM –CPP)	Private bag 13306, Windhoek	+264 61 284 2811	ctjijahura@cppnam.net
Nigeria	RURCON (Rural Development Counsellors for Christian Churches in Africa)	P.O. Box 6617, Jos	+234 734 61560	Agwaivangmin@aol.com
Rwanda	Rwanda Rural Rehabilitation Initiative (RWARRI)	P.O. Box 256 Kigali	+250 514 789	rwarri@rwanda1.com
South Africa	Organics South Africa	P.O. Box 98347, Sloane Park 2152	+27 21 808 1767	khanana@mweb.co.za
South Africa	WESSA (Wildlife and Environment Society of South Africa)	P.O. Box 394, Howick 3290	+27 33 330 3931	ecoschools@wessa.co.za
Tanzania	National Network of Small-Scale Farmers Groups in Tanzania (MVIWATA)	P.O. Box 3220, Morogoro	+255 023 261 41 84	info@mviwata.org
Tanzania	SCC-VI Agroforestry Project – Mara	P.O. Box 1315, Mara	+255 028 264 2293	mara@viafp.org
Uganda	National Organic Agricultural Movement of Uganda	P.O. Box 70071, Kampala	+256 312 26 4039	admin@nogamu.org.ug
Zambia	Organic Producers and Processors Association of Zambia	P.O. Box 35317, Lusaka	+260 1 263070	oas@organic.org.zm
Zambia	PELUM (Participatory Ecological Land Use Movement) Association, Regional Desk	P.O. Box 320362, Lusaka	+260 211 257 115	pelumrd@pelum.org.zm
Zimbabwe	Fambidzanai Permaculture Centre	Box CY 301 Causeway, Harare	+263 4 291 5404	fambidza@yahoo.co.uk

Please note that, due to space constraints, we could not list all the relevant organisations here. For details of other useful organisations in your country, please contact the organisation listed for your country or the Rescope Programme (see contact for Malawi on the above list).

Appendix ii:

Plant companions and enemies

CROP	COMPANIONS	ENEMIES
Beans (pole)	potatoes, carrots, cucumber, cauliflower, maize, herbs	onions, garlic
Bush beans	potatoes, cucumber, maize	onions, garlic
Cabbage family	aromatic plants, potatoes, dill, chamomile, sage, beets, onions, rosemary	strawberries, tomatoes, pole beans
Carrots	peas, lettuce, chives, onions, leeks, rosemary, sage, tomatoes	dill
Celery	leeks, tomatoes, bush beans, cauliflower, cabbage	
Cucumber	beans, maize, peas, radishes, sunflower	potatoes, aromatic herbs
Eggplant	beans	
Leeks	onions, celery, carrots	
Lettuce	carrots, radishes	
Maize	potatoes, peas, beans, cucumber, pumpkins, squash	
Onions and garlic	beets, tomatoes, lettuce, cabbage parsley, chamomile	peas, beans
Parsley	tomatoes, asparagus	
Peas	carrots, turnips, radishes, cucumber, most vegetables	onions, garlic, potatoes
Potatoes	beans, maize, cabbage, marigolds, horse radish, eggplant	pumpkin, squash, cucumber, tomatoes
Pumpkins	maize, sweet millet, sorghum	potatoes
Soya beans	grow with anything!	
Spinach	strawberries	
Sunflower	strawberries, maize	potatoes
Tomatoes	chives, onion, parsley, asparagus, carrots, marigolds	potatoes, fennel, cabbage

Appendix iii:
Further reading

Feeding the nine billion, Alex Evans (Chatham House Publications, 2009). www.chathamhouse.org.uk

Foresight. The Future of Food and Farming (2011). Final Project Report. The Government Office for Science, London. www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf

Klimaforum: A People's Declaration on Climate Change (2009) www.internationalviewpoint.org/spip.php?article1777

Low Input Food and Nutrition Security, growing and eating more using less, Stacia Nordin (World Food Programme, 2005). wfp.lilongwe@wfp.org; Nordinmalawi@gmail.com

Malawi's Traditional and Modern Cooking, Chitukuko Cha Amayi m'Malawi (1992 and 2008). CCAM, Box 2825, Blantyre, Malawi.

Natural Pest and Disease Control, Henry Elwell and Anita Maas (1995) Natural Farming Network Zimbabwe, PO Box CY301, Causeway, Zimbabwe.

Permaculture Posters, June Walker (2005). Set of 14 posters illustrating permaculture ideas and methods. jwthanthwe@googlemail.com

The SCOPE Facilitators book, Anna Brazier (The SCOPE Programme and the College Press, 2004). scope@ecoweb.co.zw

The Learners' Activity Book, Anna Brazier (The SCOPE Programme and the College Press, 2004), Harare. scope@ecoweb.co.zw

Underpinning Conservation Agriculture's Benefits: The Roots of Soil Health and Function, Francis Shaxson, Amir Kassam, Theodor Friedrich, Bob Boddey, and Adewale Adekunle (Soil Health Workshop Rome, 2008). www.fao.org/ag/ca/doc/SHW_MainDoc_0708.pdf

Organic Agriculture and Food Security in Africa, United Nations Conference on Trade and Development & United Nations Environment Programme, (UNEP-UNCTAD, 2008), www.foodfirst.org/en/node/2306

World hunger best cured by small-scale agriculture: report (2011) www.guardian.co.uk/environment/2011/jan/13/world-hunger-small-scale-agriculture

Appendix iv:

More varied drinks, snacks and main meals

Main meals

Principles for adapting meals to 'More Food' messages

1. Eat mainly from local sources - but as many different foods as possible.

2, Shorten cooking times and vary methods of cooking.

3. Eat raw, but well-washed, fruits and vegetables every day.

4. Seeds, nuts or legumes should be the only proteins at **two of your meals** - every week.

5. Do not eat meat more than once in any day and eat fish or seafood **at least twice** each week.

6. Use only wholemeal maize, millet or finger millet, wheat or sorghum flours, eating at least **three different staples** or 'energy giving foods' each week, but in smaller amounts. Boil sweet potatoes, remove their skins and mash with margarine and milk. Eat cassava or yam boiled in pieces or as porridge.

7. Eat at least **five vegetables or fruits** each day, choosing a 'rainbow of different colours' - red, yellow, orange, purple, light and dark green leaves.

8. When edible insects or larvae (e.g. mopani worms, crickets or termites) are in season, roast lightly, add a little oil or water and salt or chillies.

9. Eggs with vegetables: beat 1 egg with 1 tablespoon of milk per person, add a pinch of salt, cook quickly in a little oil, stirring constantly, add chopped raw tomatoes and onions just before the egg mixture 'sets' and take off the fire half a minute later.

10. Eat organically grown foods. Chemicals in foods can cause health problems.

Drinks

We hope you will not serve any artificially flavoured bottled drinks - especially at training events. These so-called 'soft drinks' are expensive and provide no nourishment. Instead serve nutritious home-made alternatives, either hot or cold, depending on the weather, such as:

Traditional non-alcoholic drinks made with maize or millet flour (called thobwa or mahewu in some countries).

Lemon grass or lemon balm tea: wash and chop up (a handful per person) of lemon grass leaves or a piece of lemon balm into a tea-pot and add boiling water. Allow to stand for at least three minutes, then pour out 'tea' and add honey or brown sugar.

Rosella sepals, fresh or dried: boil in water to make tea - also very good cold.

Citrus drinks: wash whole lemons or oranges, slice thinly into a jug or bowl, add one tablespoon sugar and 2 cups boiling water for each fruit, cover and stand, stirring occasionally. After 2 hours pour off juice, dilute with water before drinking. Use half a lemon per person or one orange for 3 people. You can soak sliced fruit once more, with more boiling water and sugar, for more juice. Add discarded fruit to compost.

Guava juice: wash ripe fruit, chop in pieces, put 2 cups of fruit, 1 cup of sugar and 3 cups

of boiling water into a bowl, add juice of 1 lemon, stir, cover, and leave overnight. Strain before use next day, or refrigerate for a day or two. Add discarded fruit to compost.

Baobab juice: use traditional recipes if fruits are in season - very good and rich in vitamin C.

Clean water: very good, too, and most people don't drink enough for good health! Best taken between meals, up to 40 minutes before the next meal, at least 2 litres every day for adults. Serve at 'tea-breaks' during workshops and training events.

Soya milk: soak soya beans in clean water overnight for at least 16 hours. Next day, drain and rinse beans, then mash or grind them (hard work!). Add 4 cups of boiled water for each cup of mashed beans and heat slowly, stirring all the time, until boiling. Take pot off the fire and squeeze soya milk through a clean cloth or fine sieve into another pot. Add 2 cups of hot water to the mash and squeeze out more milk. Boil soya milk for 10 minutes, then use it like cow's milk. What remains in the sieve or cloth is okara – use it in non-meat dishes or with breakfast porridge or to make soya rusks.

Tasty snacks to increase energy

'Popped' maize or sorghum: dry roast with a little oil in a closed saucepan or pot, shaking often. Separate any corn that has not 'popped' and give that to chickens, to save your teeth.

Dry roasted seeds: dry roast pumpkin, sunflower and sesame seeds (one kind or mixed) in a little oil in a thick frying pan, for one or two minutes, covered. Stir once.

Roasted groundnuts: best without salt, as most people eat too much salt for health.

Bananas or guavas: whole; guavas need washing first.

Soya rusks: Mix 300 gm of okara with 150 gm of flour and 2 teaspoons of bicarbonate of soda. Rub in 100 gm of margarine and a pinch of salt. Beat 1 egg in 250 ml of milk or soya milk and mix dough. Pat dough flat in a thin layer in a greased baking tray. Mark out 36 rusk biscuits and bake in a hot oven for 30 minutes. Cool slightly before removing rusks. When cool and dry, store in an airtight tin. Good dipped in tea or soup - as they are hard. Nourishing for children.

Fruit mandasi: Mix 4 cups of flour, 2 teaspoons of baking powder and 4 tablespoons of sugar. Add 2 beaten eggs and 2 cups of milk or water, beat well. Cut peeled bananas, mangoes or pineapple into bite-sized pieces, dip into batter and fry quickly in hot oil.

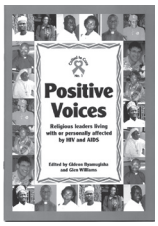
Groundnut biscuits: Cream 3 cups of margarine and 1 cup of sugar together, add 2 cups of sieved wheat flour and 1 teaspoon of bicarbonate of soda, 2 beaten eggs and 1 cup of peanut butter or groundnut flour, to make a stiff dough. Flatten small balls of dough onto a greased baking tray. Bake in a moderate oven or fry on greased metal sheet until brown and store in an airtight tin.

Pumpkin scones: Sieve 2 cups of flour, 2 teaspoons of baking powder and pinch of salt together, beat 1 egg and mix with 1 cup of cooked and mashed pumpkin. Mix with flour and add a little milk if too dry. Bake spoonfuls on a greased baking tray in a hot oven (or fry) until brown, store in an airtight tin. Eat with margarine, peanut butter or jam.

Boiled cereal and legume mix: take a mixture of any cereal grains and cowpeas or nuts and boil until soft. Add salt to taste.

The *Called to Care* toolkit

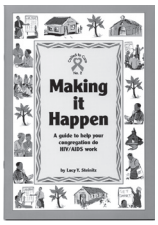
POSITIVE VOICES



Religious leaders living with or personally affected by HIV and AIDS

Personal testimonies by 14 African religious leaders (12 Christians, two Muslims) who are living with or personally affected by HIV. (40 pages; 2005; ISBN 978-0-9549051-3-2; http://www.stratshope.org/b-cc-01-positive.htm)

MAKING IT HAPPEN



A guide to help your congregation do HIV/AIDS work

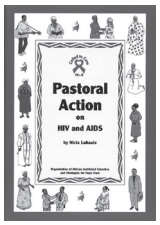
A manual to help church leaders establish and manage an HIV project. Includes sections on planning, decision-making, writing a project proposal, preparing a budget, accounting for funds, and monitoring and evaluation. *(44 pages; 2005; ISBN 978-0-9549051-1-8; http://www.stratshope.org/b-cc-02-happen.htm)*

TIME TO TALK

A guide to family life in the age of AIDS

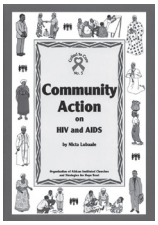
A handbook to enable churches and communities to discuss family life and sex in the context of the global AIDS epidemic. Contains role plays, games, quizzes, discussion guidelines, Bible studies and other participatory exercises. *(44 pages; 2006; ISBN 978-0-9549051-8-7; http://www.stratshope.org/b-cc-03-talk.htm)*

PASTORAL ACTION ON HIV AND AIDS



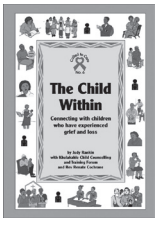
Developed by the Organisation of African Instituted Churches (OAIC), this handbook is designed for training pastors and lay church leaders in addressing the pastoral challenges of the AIDS epidemic. *(48 pages; 2008; ISBN 978-1-905746-04-0; http://www.stratshope.org/b-cc-04-pastoral.htm).*

COMMUNITY ACTION ON HIV AND AIDS



Also developed by the OAIC, this book is designed to help church leaders deal with social, cultural and economic issues related to the AIDS epidemic at community level. Covers topics such as the sexual abuse of children, domestic violence, widow inheritance and property grabbing by relatives. *(48 pages; 2008; ISBN 978-1-905746-05-7; http://www.stratshope.org/b-cc-05-community.htm).*

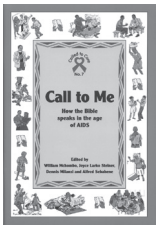
THE CHILD WITHIN



Connecting with children who have experienced grief and loss

Developed in South Africa's Eastern Province, this handbook breaks new ground in promoting resilience in children who have suffered grief and personal loss. It does so by enabling adults who are child care-givers to rediscover and appreciate their own 'child within'. *(68 pages; 2008; ISBN 978-1-905746-08-8; http://www.stratshope.org/b-cc-06-child.htm)*

CALL TO ME



How the Bible speaks in the age of AIDS

Designed for use by churches, faith-based organisations, NGOs and community groups. Consists of 20 Bible studies on topics related to HIV and AIDS, e.g. sex and sexuality; healing; death; grief and mourning; stigma, discrimination and denial; church leadership; marriage; children; fear and anxiety. *(76 pages; 2010; ISBN 978-1-905746-14-9; http://www.stratshope.org/b-cc-07-me.htm)*

MY LIFE - STARTING NOW

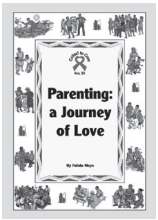
Knowledge and skills for young adolescents

Focuses on knowledge and life skills for young people aged 10-15, with special emphasis on reproductive health within the total process of growing up. Takes a participatory approach to teaching and learning, using role play, case studies, games, stories, quizzes, Bible study and artwork. *(80 pages; 2010; ISBN 978-1-905746-15-6; http://www.stratshope.org/b-cc-08-life.htm)*

MORE AND BETTER FOOD

For people living with HIV and AIDS, good nutrition is just as important as medical care. Yet in sub-Saharan Africa most people living with HIV suffer from food and nutrition insecurity. This book demonstrates how small-scale farmers can grow more food in sustainable ways that also address the challenge of climate change. *(88 pages; 2011; ISBN 978-1-905746-16-3; http://www.stratshope.org/b-cc-09-food.htm)*

PARENTING: A JOURNEY OF LOVE



Focuses on the knowledge and skills which parents and guardians need to provide their children with protection against threats to their health and wellbeing, and to give them the best possible start in life. Uses stories, poems, quotes, Bible studies, games and participatory exercises. (56 pages; *2011; ISBN 978-1-905746-19-4; http://www.stratshope.org/b-cc-10-parent.htm)*

To order or request copies of these books, please contact the Strategies for Hope Trust:

sfh@stratshope.org

(See front of book for full contact details)

The **CALLED TO CARE** toolkit consists of practical, action-oriented handbooks and mini-manuals on issues related to HIV and AIDS, designed for use by church leaders, especially in sub-Saharan Africa. The purpose of the materials is to enable pastors, priests, religious sisters and brothers, lay church leaders and their congregations and communities to:

Called to Care

No. 9

- Reflect on and understand the spiritual, theological, ethical, health, social and practical implications of the HIV epidemic and the Christian call to respond with compassion.
- Overcome the stigma, silence, discrimination, denial, fear and inertia that inhibit church and community action to address issues related to HIV and AIDS more effectively.
- Guide their congregations and communities through a process of learning and change, leading to practical, church-based actions to help individuals, families and communities reduce the spread of HIV and mitigate the impact of the HIV epidemic.

CALLED TO CARE is an initiative of the Strategies for Hope Trust, which produces books and videos that promote effective, community-based strategies of HIV and AIDS care, support and prevention in the developing world, especially in sub-Saharan Africa.

CALLED TO CARE is implemented through a process of international, ecumenical cooperation involving churches, other faith-based organisations, international church bodies, publishers, distributors and other partners.

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Photos of a primary school in Malawi, taken before and after the implementation of permaculture.

STRATEGIES FOR HOPE

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