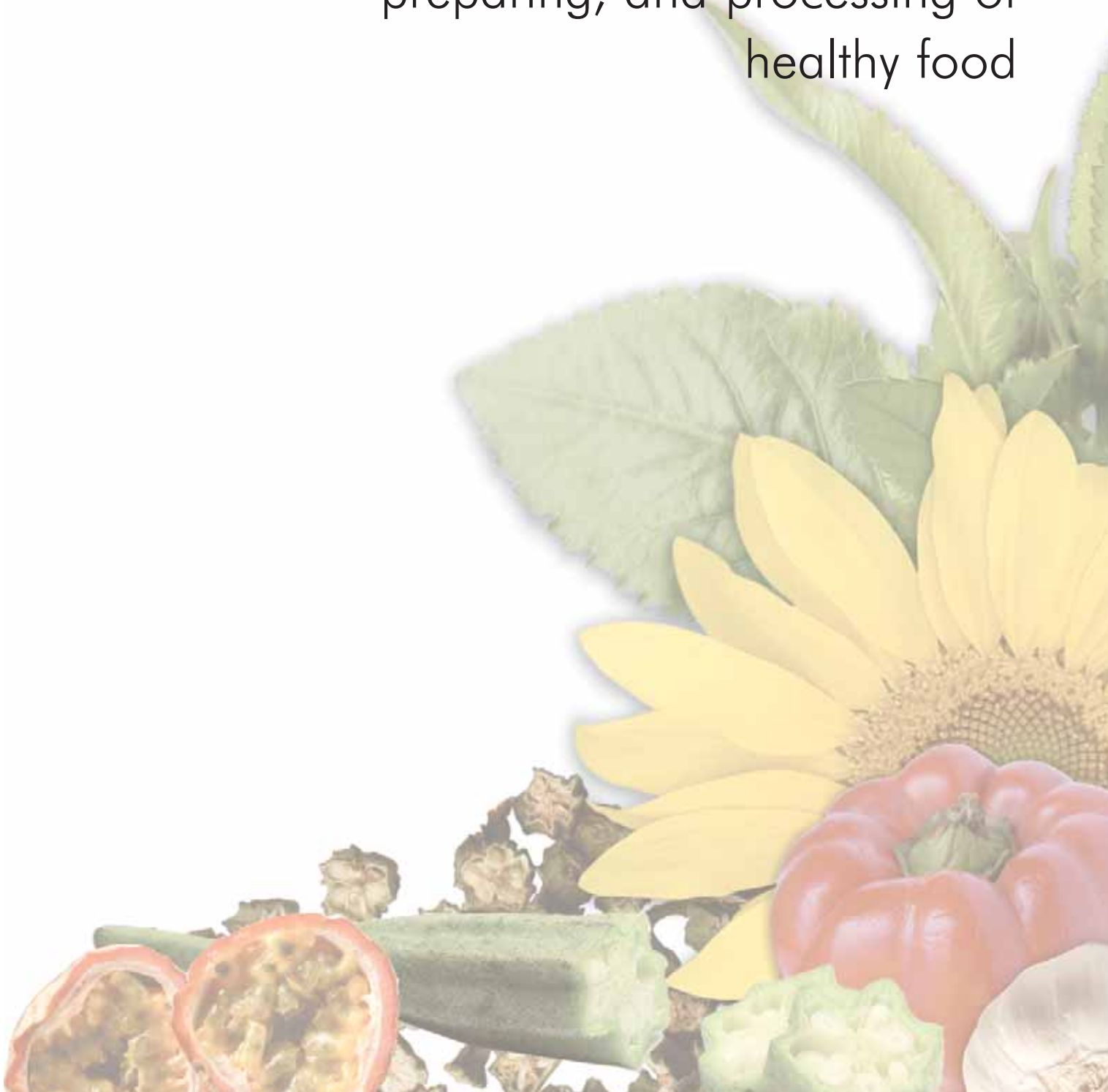
Healthy Harvest

A training manual for community workers in good nutrition and the growing, preparing, and processing of healthy food



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FOREWORD

This manual is an important tool for harmonizing available technical knowledge, skills and practice of community based extension workers involved in food security and nutrition programmes. Training communities using this manual will empower them to reduce their vulnerability to food insecurity and malnutrition. Communities will have their knowledge and skills in food production, processing, preparation and consumption of a diversified and healthy diet improved.

The manual is targeted at all extension workers both in the public, non-government sectors as well as civic organisations and in so doing acknowledges the need for a multi-sectoral approach in addressing food security and nutrition problems.

The Food and Nutrition Council is pleased to have been part of the development of this important manual as it is in line with its mandate of facilitating and promoting a cohesive multi-sectoral approach to solving food and nutrition problems. I also take this opportunity to express my appreciation of the partnership which guided the process of developing this manual. UNICEF and FAO provided financial and technical support while the Ministry of Health and Child Welfare and the Department of Agricultural Research and Extension Services (AREX) in the Ministry of Agriculture provided technical input.

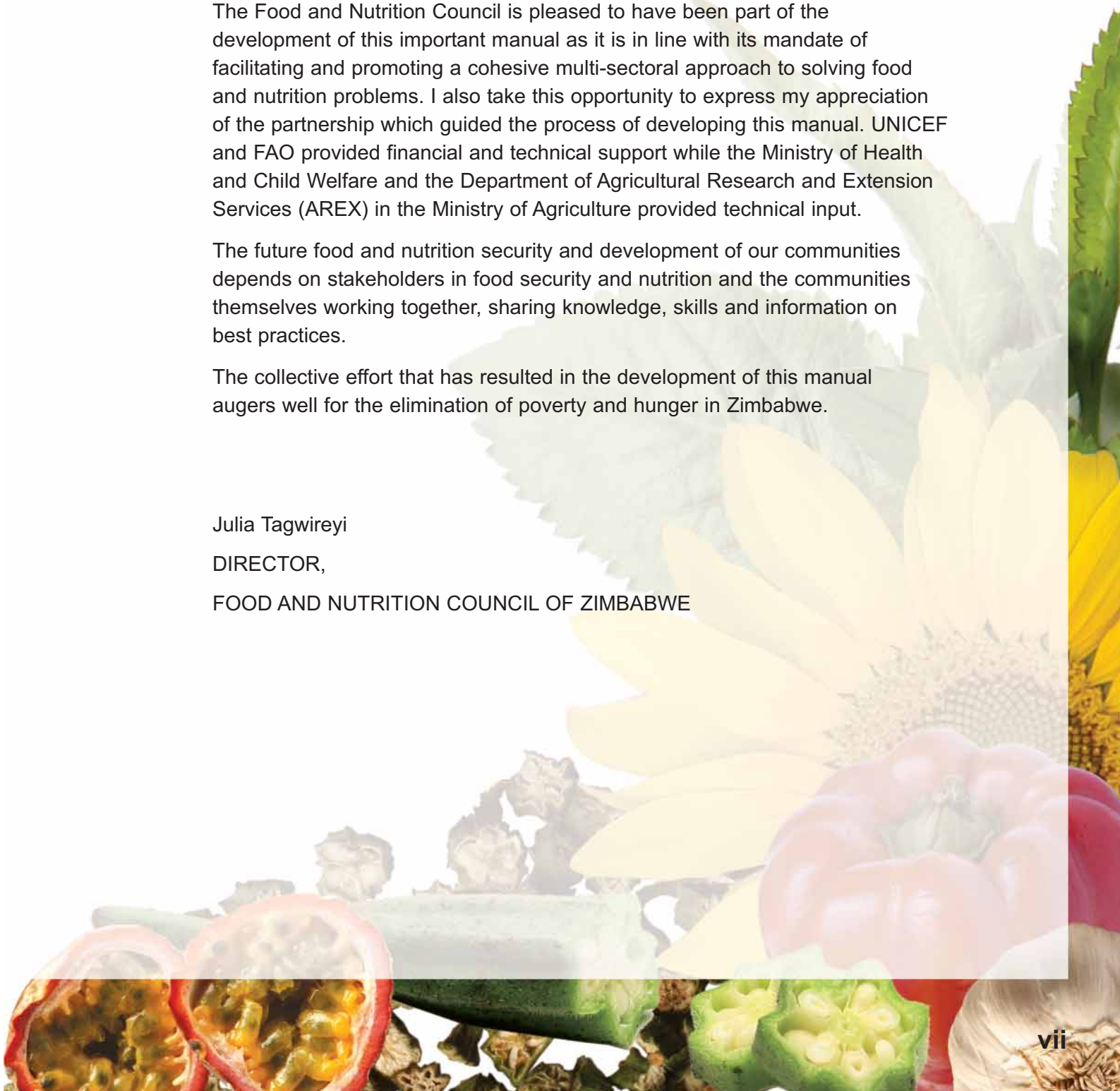
The future food and nutrition security and development of our communities depends on stakeholders in food security and nutrition and the communities themselves working together, sharing knowledge, skills and information on best practices.

The collective effort that has resulted in the development of this manual augers well for the elimination of poverty and hunger in Zimbabwe.

Julia Tagwireyi

DIRECTOR,

FOOD AND NUTRITION COUNCIL OF ZIMBABWE



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ABOUT THIS BOOK

Your harvest consists of the ripe crops and animal products that you collect from your garden and fields. A healthy garden should produce many different types of healthy crops which can be harvested all year round. The crops can be prepared to make nutritious dishes to keep your family strong and well. The extra produce can be processed and preserved so that it can be eaten at times of the year when fresh food is less easy to grow. It can also be sold to generate an income for the family.

This book is for anyone who wants to carry out simple training programmes, awareness-raising or outreach activities on good nutrition, growing, preparing, eating and processing healthy food.

Information about nutrition can be used to grow crops that will help everyone to have a healthy, balanced diet and to save money by growing more food in the home. Once a productive garden has been set up, the extra crops can be sold to give the family an income. Knowing about nutrition can help families to get the most from the food that they harvest by preparing, preserving and processing food effectively.

This book will not make trainers or trainees into nutrition experts, but it does contain simple, clear information so you can help families and communities to eat better food. We focus mainly on food crop production, although integrating livestock is mentioned, where appropriate.

The book is divided into four modules. Each module is divided into training sessions. In each session we give trainers background information, the session's aims and examples of activities that will make the training more interesting and useful for participants. We also give tips on the resources you will need to prepare for each activity and the approximate length of time that each will take. Use the modules, sessions and activities in the book to design your own training programme according to the needs of the community you are working with, the background of your participants and the resources and time you have available.

In the introduction we discuss how to make community-based training more useful and practical for participants. We also give tips on how to plan, organise and carry out training.

Module 1 describes the basic principles of nutrition: how our bodies use food, what kinds of food our bodies need to function properly and what happens when we don't get enough of the right kinds of food. We suggest meals and menu plans for the family.

Module 2 explains how to set up nutrition gardens in households, schools and other places. We explain how to choose and grow nutritious crops and how to achieve a healthy, productive garden with minimum inputs.

Module 3 looks at special diets for women and children of different ages and people who are sick. We also talk about how to help them.

Module 4 describes ways of preparing healthy ingredients to get the most from our food. We explain how families can eat healthy meals that do not take too much time or money to prepare. We describe how to harvest, store, prepare, preserve and process food for a healthy diet using the garden all year round.

Training in the community

Training in the community can take many forms. It can consist of a short talk at a primary school, a cooking demonstration in someone's garden, a garden tour at an irrigation project, a community awareness day at a rural clinic or a five-day training programme at a youth training centre. All these methods are useful to different people at different times.

The participants

Adapt your training session according to the group that you are working with. Here are some examples of different groups:

- garden clubs
- church groups
- schools–pupils, parents, school development council (SDC) members and staff
- contact farmers
- home-based care volunteers
- young people
- health workers

Gender sensitivity

Women play a vital role in food production and household nutrition, so they must be a focus of nutrition training programmes. Women and children are the most affected by malnutrition in every community but men must not be excluded. In many communities men are important in decision-making and if they are left out of awareness-raising campaigns and stakeholder meetings, the impact of training may be greatly reduced. Many men love cooking and make great cooks. Keep this in mind.

Children and schools

Schools can be an excellent venue for a nutrition garden campaign. The school garden can become a productive food source for pupils, especially in urban areas where household gardens are small or non-existent. The nutrition garden can become a place where children can learn about the environment, nutrition and income generation. Teachers from different departments can work together to use the garden as an educational resource to teach agriculture, home economics, science, geography and even accounts and maths.

Schools provide an important link with the community. By involving the SDC, parents and other community members can be reached through community-awareness days, parents' meetings and open days. Schools can become community demonstration centres and nurseries can be established where the seedlings of useful, nutritious crops (fruit, leaf, legume, root and field) can be grown and distributed.

However, schools face special problems that need to be discussed at the start of the training programme.

- It has to be clear who owns the produce from the garden. A garden monitor must take a register of all those who work in the garden and someone must be in charge of sharing the produce fairly.
- A large sign should be erected outside the garden or painted on one of the boundary walls, explaining who the garden belongs to and the rules of the garden.
- The school groundsman must be involved in the nutrition training so that he appreciates the garden.
- A duty roster needs to be worked out for the garden. The garden must be looked after during the school holidays.

The training programme

Here are some examples of programmes of different types of nutrition training that could take place during a three-day training course in nutrition and nutrition gardens. Include in each day of training three meals: morning tea, lunch and afternoon tea. Serve the following:

Suggested Menu

10.00–10.30	**Morning tea** - healthy traditional snacks such as sweet potatoes, squash, cassava or yam and mahewu or unsweetened herb tea to drink. Talk about the value of eating less sugar and salt during tea.
1.00–2.00	**Lunch** - healthy traditional meal that includes vegetable protein, healthy non-refined staple dish, at least three different-coloured vegetables and fruit to end the meal. Clean, fresh water should be served with the meal. Talk about how much of each food group should be eaten in each meal.
3.00–3.30	**Afternoon tea** - healthy traditional snack which could include popcorn, termites, caterpillars or cooked mixed beans. Mahewu or herbal tea to drink. Talk about different herbal teas

Times	**Day one**	
	Content	**Type of session**
8.00–9.00	Introductions, hopes and fears for the course	
9.00–10.00	What is food for? How does the body use food?	Presentation and discussion
10.00–10.30	**Morning tea** – see suggestions for menu above.	
10.30–1.00	What is nutrition? What is malnutrition? What are the causes and effects of malnutrition at household and community level?	Introduction, discussion. Group exercise: problem tree
1.00–2.00	**Lunch** – see suggestions for menu above.	
10.30–1.00	The components of a healthy, balanced diet. The nutrients: carbohydrates, fats, protein, vitamins and minerals. Discuss vegetable protein and complementary carbohydrates.	Group activity. List different ingredients on small cards. Ask the participants to sort the cards and place them in the appropriate place on a diagram of a healthy plate which is placed in the centre of a room.
1.00–2.00	**Afternoon tea** – see suggestions for menu above.	
3.30–5.00	Which crops can we grow in order to obtain a healthy diet from our garden? How can we get protein from plants and animals?	Group activity - list different crops according to each nutrient group category. Discuss areas where each crop can be grown, such as in the garden, in fields, near rivers or in wetlands.

Times	Day two	
	Content	**Type of session**
8.00–9.00	Recap the previous day	Report back
9.00–10.00	Nutrition for different age groups and special groups	Presentation and discussion
10.00–10.30	**Morning tea** – see suggested menu	
10.30–1.00	Nutrition for different age groups Nutrition for people who are sick	Presentation and discussion
1.00–2.00	**Lunch** – see suggested menu	
2.00–3.00	Menus for different age groups and special groups	Group activity - develop special menus for different people. Give each group a different person to design a menu for - like a baby who is being weaned, a pregnant woman, a person with diarrohea, a person who has TB.
1.00–2.00	**Afternoon tea** – see suggested menu	
3.30–5.00	Nutrition and the HIV/AIDS timeline. Use of herbs.	Presentation and discussion

Times	Day three	
	Content	**Type of session**
8.00–9.00	Recap the previous day	Report back
9.00–10.00	Healthy handling and preparation of food.	Presentation and discussion
10.00–10.30	**Morning tea** – see suggested menu	
10.30–1.00	Drying and storing food	Demonstration and group activities
1.00–2.00	**Lunch** – see suggested menu	
2.00–3.00	Developing a demonstration nutrition garden	Practical exercise
1.00–2.00	**Afternoon tea** – see suggested menu	
3.30–4.30	Developing a demonstration nutrition garden, continued	Practical exercise
4.30–5.00	Course evaluation, seed handout and closing remarks	

INTRODUCTION

Example of a one-day introduction to nutrition gardens.

Times	Content	Type of session
8.00–8.30	Introductions	Report back
8.30–10.00	What is a healthy, balanced diet? The nutrient groups: carbohydrates, fats, proteins, vitamins and minerals. Discuss vegetable protein and complementary carbohydrates.	Group activity – list different ingredients on small cards. Ask the participants to sort the cards and place them in the appropriate place on a diagram of a healthy plate which is placed in the centre of a room.
10.00–10.30	**Morning tea** – see suggested menu	
10.30–1.00	Effective handling, preparation, processing and storage of food	Demonstration and group activities
1.00–2.00	**Lunch** – see suggested menu	
2.00–3.00	How to turn your garden into a nutrition garden	Practical exercise
1.00–2.00	**Afternoon tea** – see suggested menu	
3.30–4.30	Nutrition for special groups of people	Discussion and presentation
4.30–5.00	Conclusion and closing remarks	

Participants during short nutrition training courses

Example of a programme for a morning nutrition awareness day at an urban school:

Invitees: the school staff, school development association (SDA) members, representatives from the pupils (Grades 2 and above), the district education officer, community members, representatives of local community-based organisations, social workers and community health workers.

8.00–9.00	Welcome and introductions
9.00–9.10	A song about health by the Grade 4 choir
9.10–9.20	A nutrition story from the Grade 3 drama club
9.20–10.15	Presentation on the importance of giving children a healthy balanced diet - Grade 6 teachers
10.15–10.45	Refreshment samples of healthy traditional and other snacks prepared by Grade 7
10.45–11.30	Discussion on giving children healthy snacks to bring to school, chaired by Grade 7
11.30–12.00	Poster presentations by Grades 5–6 on awareness of healthy food and junk food
12.00–1.00	Tour of the school nutrition garden
1.00–2.00	Delicious, healthy traditional lunch prepared by the SDA, teachers and the nutrition club.

These programmes should be adapted according to the community and situation you are working with.

School nutrition garden

Tips on training

- Present the topic of nutrition in an active and participatory way to keep your audience's interest.
- Try to include as many practical sessions, demonstrations, group activities and exercises as possible.
- Make the theory sessions short and informative. Do not give participants too much information that is not directly relevant or useful to them.
- Everyone knows something about food. Everyone has a favourite dish or ingredient. In your sessions be sure to invite the participants to share their knowledge and experience as much as possible.
- Read through the background information for each session the day before and make sure that each session is well organised and that you have all the materials you need for each session.

Training tools

Before you design and conduct a training programme it is important to find out as much as possible about the community that you are working in. Community-based programmes are most successful when the community is helped to

- identify what is already available in the community (resource appraisal);
- define their problems;
- identify their needs;
- define what they want to achieve (their goals) and
- plan how they are going to achieve their goals and tackle their problems (develop an action plan)

The following can be used by a community-based trainer

Stakeholder meetings

The success of a community-based training programme also hinges on making as many people in the community as possible aware of what you are trying to do. That means holding stakeholder meetings with members of the community who can help. These people include local leaders, church leaders, government officials, representatives of non-governmental organisations, health workers, agricultural extension workers, school administrators, teacher and SDA members.

Stakeholder meetings can be discussed and planned during training courses. One useful activity is getting participants to list all the important stakeholders in their community who could help a nutrition awareness programme to identify and set up successful demonstration nutrition gardens.

The problem tree

The problem tree provides a very useful way for discussing important problems which have many causes and effects. Trainers can use it to help participants list the causes and effects of a problem, such as malnutrition in the community, soil erosion or poverty. See example of a problem tree on page 26.

Use small pieces of paper for this activity. Ask participants to write down the causes and effects of the problem on separate pieces of paper and then try to arrange them in the shape of a tree, with the causes as roots below the trunk of the "tree" and the effects making the branches of the tree. If you use pieces of paper they can easily be moved around and rearranged so that participants can see that sometimes what they think of as causes are often effects. This helps them to address some of their community problems.

Codes

Codes are pictures of problems which can be used to stimulate discussions. To make the code you should draw a large, clear picture of a problem such as a hungry family trying to water a dried out garden. Use the picture to get participants to discuss the problems they see.

Participant making a problem tree

Nutrition training in Mabvuku

Group discussions

Discussions are an open way of looking at a problem. The best size for a group discussion is between five and eight people. Smaller groups tend to come up with fewer ideas while larger groups are hard to manage and so each member of the group participates less.

You can give each group a different problem to discuss, such as: “people not eating enough fresh fruit and vegetables”, “people not establishing their own gardens at home”, “people not getting enough fibre in their diet”, “children eating unhealthy food at school” and “families not having enough time to prepare nutritious food”. Giving each group a separate topic saves time and helps you to discuss many problems together.

Alternatively you can give each group the same problem to discuss such as "the causes of malnutrition in school children". In this case you can compare the ways different groups tackled the same problem in discussion. After the group discussions make time for the groups to come together to report back their findings. The findings should be summarised and listed by the trainer.

Drama

Nutrition problems are effectively expressed through a short play, a poem or a song. Many communities have active drama groups that would be willing to put on a play about different nutrition problems to raise awareness. School drama groups can also be used to put forward ideas during open day. Help the drama groups to plan their performance by giving them a clear situation or topic to discuss, such as:

- A story about a group of children who do not want to eat healthy traditional food because they think eating junk food, sweets and fizzy drinks is more “modern”. The children meet an interesting youth leader who comes to their school and talks to them about the importance of healthy food. The children change their attitude towards food.
- A story about a rural child-headed family who struggle until they get help from community members to set up their own healthy garden at a community irrigation scheme.

Make sure the story is short and to the point. Long plays put people to sleep. The characters in the drama should be clearly defined so their words and behaviour stick in the minds of the audience. The play should contain plenty of action and not too many long speeches. People will learn more by being entertained than by being lectured to. Songs, music and dance help to make a play more memorable. The play should contain dramatic moments so that it has some sad, exciting or frightening moments and some happy or funny moments – just like real life.

Role play

Role play helps people to see other points of view. For instance, role play helps groups of adults to think about children's issues; extension workers to see things from the point of view of different community members and it helps householders to understand how hard it can be to be a decision maker or a government official.

During a training workshop you could set up a role play where you get participants to act the role of different characters. For example, a school home economics teacher, an agriculture teacher, a head teacher, the groundsman and a Grade 7 student all want different things from the school garden. They all start to argue their own points of view about the garden. An SDA member intervenes and after a discussion they all reach a compromise and agree to adapt the garden so that they can all use it.

Training coordinators are strongly encouraged to use a multi-sectoral approach intergrating nutrition, agriculture and health (HIV and AIDS) involving the following stakeholders: Mininistry of Health and Child Welfare, City Health Departments, HIV/AIDS Committees, Local Governments, Ministry of Agriculture, Ministry of Education, Sports and Culture, NGO’s and Civil Society.

This manual has been designed in such a way that any module can be taught in any order.

module ONE

principles of nutrition

OBJECTIVES

By the end of this training module participants should be able to

- identify and describe the different foods and nutrients needed to maintain health and know the basic functions of different nutrients;
- describe the different combinations and proportions of local foods for a healthy balanced meal;
- know the nutritional needs of different family members and age groups;
- define malnutrition and recognise the basic symptoms;
- explain the main causes of malnutrition in their community and develop some ways to address these causes.

Nutrition is the science of food and how the body uses it to provide therequired nutrients in sufficient quantities to ensure normal body function, growth, development and maintenance of the immune system.

Ministry of Health and Child Welfare

Session 1:
how our bodies use food

Food contains nutrients – substances which the body uses for growing and functioning. Food gives us energy to move, think and work. Food also contains important substances which keep our bodies strong and healthy, help to boost our immune system and protect us from infections.

When we eat, our bodies absorb useful nutrients into the blood where they are transported to areas where they are needed. These include the bones, the muscles, the brain and the organs. The waste material is removed from the body when we go to the toilet.

The nutrients that are important for our body can be divided into:

Carbohydrates from staple foods

These include starch and sugars. These foods give our bodies energy to move, work and think. They also help to keep us warm. We get most carbohydrates from grain crops such as wheat, maize, sorghum, millet and rice, and root crops such as potatoes, sweet potatoes and cassava.

Carbohydrate that is not used immediately by our bodies is stored as fat. Too much stored fat can be unhealthy for the body. Eating large amounts of refined carbohydrate such as refined maize meal, white bread, white rice and white sugar is unhealthy. Refined foods are processed in factories to make them look tastier. Unfortunately, the refining process removes most of the important fibre, protein, minerals and vitamins these foods naturally contain. It is much better to eat unrefined staple foods with every meal as a cheap, healthy source of energy and fibre, as well as some protein, vitamins and minerals.

Food Group

Food can be divided into different groups according to the type of nutrient provided:

Food Group	Example of crop or source	Nutrients supplied
Staple foods	Grains such as maize and refined wheat and rice	Energy from carbohydrate
	Unrefined grains such as sorghum, millet, brown rice and whole wheat	Energy, protein, vitamins and minerals, fibre
	Root crops such as sweet potatoes, cassava, yams	Energy, vitamins and minerals, fibre
Legumes	Beans such as cow pea, pigeon pea, soya beans, bambara nut, sugar beans	Protein, energy, vitamins and minerals
Oil seeds	Groundnuts, sunflower seeds, sesame seed	Protein, fat, vitamins and minerals
Animal products	Red meat, poultry and fish, eggs and dairy products such as milk, yoghurt, cheese	Protein, vitamins and minerals, fat and energy
Vegetables and Fruits	Dark green vegetables especially spinach, pumpkin leaves, cassava leaves, sweet potatoes leaves, cowpea leaves, black jack and amaranth	Vitamins A, E, B, calcium and iron
	Orange vegetables and fruit such as carrots, butternut squash, pumpkin and yellow sweet potatoes, mango and pawpaw	Vitamins A, E,
	Fruit such as baobab, citrus, guava, tomatoes	Vitamin C
Fats and oils	Animal products and oil seeds	Energy
Sugar	Refined plant sugar	Energy

Cereal crop options

Maize is a good source of energy but it contains less protein, vitamins and minerals than millet or sorghum. Maize is also not well suited to the growing conditions in Zimbabwe. Maize needs plenty of water and rich soils in which to grow. It is also susceptible to pests and diseases. Sorghum and millet are tough, nutritious crops that are well suited to our climate and are more drought-tolerant, pest-tolerant and disease-tolerant than maize.

Fats and oils

Fats can come from animal products such as milk (butter) meat and fish or processed plant products such as seeds and nuts (sunflower oil and peanut butter). They provide the body with energy

Proteins

These help our bodies to grow, maintain and repair themselves. Also called body-building foods, they come from plants (beans and other legumes), processed plant products (peanut butter and soya mince), processed animal products (cheese, sour milk and yoghurt) and animals (eggs, meat, milk).

Vitamins and minerals

Vitamins and minerals are also called micronutrients. Our bodies need small amounts of these substances to help different parts such as the blood, eyes, bones, skin and hair work properly. Many of these substances help to strengthen the body's immune system and keep us strong and healthy so that we resist infection. We get most vitamins and minerals from eating fresh fruit and vegetables.

Some vitamins (A, D, E and K) are fat-soluble, so the body needs fat in order to absorb them. Vitamin A is an important immune system booster. Most of the B vitamins and vitamin C cannot be stored by the body because they are water-soluble, so we need to eat foods that contain these vitamins every day.

Energy from food

Our bodies can get energy from carbohydrates, fats and proteins. Remember that foods contain a mixture of different nutrients. For example, millet is rich in, energy, protein, vitamins and minerals.

Fibre

Apart from nutrients in food our body also needs other substances. Among these is fibre, also called roughage. Fresh fruit, vegetables and unrefined grains and legumes contain fibre. It is important for helping our bodies to digest food and remove waste. It is important to eat fibre with plenty of water.

Water

Our bodies contain more water than any other substance. All chemical processes and body functions use water. We need to drink at least eight glasses of fresh, clean water every day to stay healthy.

Activity

the food and nutrient game

Aim:

to help participants clarify which types of foods belong in which nutrient category.

Time needed:

60 minutes

Materials:

at least 60 small pieces of paper, four large pieces of flip chart paper, marker pens or crayons.

Give each participant at least two small pieces of paper. Ask them to write the name of an ingredient on the piece of paper. Explain that the ingredient can be an animal product such as beef, a vegetable such as a carrot, a plant product such as peanut butter, a piece of fruit such as a mango, a grain such as sorghum or a legume such as cow pea. Explain that they must not write already mixed ingredients on one piece of paper such as sadza and stew. Collect all the pieces of paper and mix them up together in a basket.

Meanwhile write the names of the different nutrients on large pieces of flip chart paper. Lay the pages on the floor in the centre of the room. Ask each participant to take two small pieces of paper from the basket. Get them to place each piece of paper according to the nutrients that the ingredients. Ask the rest of the group to say whether they are correct.

Now organise the ingredients according to which food group they are in. Discuss the nutrients in mixed dishes such as sadza and stew or black jack cooked in peanut butter. See also page 15 for the mixed meal game.

Participants playing the food and nutrient game

Session 2:
food and the family

Our bodies need many different types of nutrients: proteins, carbohydrates, fats, vitamins and minerals. Unfortunately these important nutrients are found in different quantities in the plants we grow, the ingredients we prepare and the dishes we make. The way we grow, harvest and prepare foods also affects the amount of nutrients that we get from the food we eat.

We need at least 12 different vitamins and seven different minerals to stay healthy. We find these in different foods. If meat is unavailable we can get protein from plant sources such as beans. Because plant proteins lack some important nutrients we must eat a range of carbohydrates including sorghum, millet, wheat and rice, rather than just maize.

Activity

making different staple dishes

Aim:

to give participants experience in preparing and eating other sources of carbohydrate.

Millet or sorghum samp

Eating millet and sorghum is a healthy alternative to maize, as they contain more protein, fibre and vitamins and minerals.

Ingredients

1 cup husked millet or sorghum grain

4 tablespoons peanut butter

Method

Pound the grain until the outer skin is removed.

Clean the grain and wash it. Boil on a low heat until soft. Add the peanut butter and mix it well. Simmer for 10 minutes. Serve with vegetables.

Brown rice (mupunga)

Brown rice used to be grown widely in wetlands around this country.

Ingredients

1 cup rice

4 tablespoons peanut butter

water

Method

Wash the rice and boil on a low heat to avoid burning. Add salt. When cooked add peanut butter and mix well. Simmer for 5–10 minutes. Serve with tea or roasted meat.

Brown rice meal porridge

Ingredients

2 cups of rice meal

4 tablespoons peanut butter

water

Method

Boil the rice meal until cooked. Add peanut butter and salt. Leave for a few minutes before serving. Serve with chicken stew.

To get a healthy diet we need to eat many different types of food each day including fruit and vegetables, grains, roots, beans, nuts and animal products. We can grow many of these things in our gardens. It is not healthy to eat the same food with the same ingredients every day.

Discussion

Use the following questions as a basis for your discussion:

- Why do some families eat the same type of food every day (for example, sadza and vegetables)?
- What problems arise if we do not have different types of ingredients in our meals?
- How can we encourage families to have a more varied diet in order to get these important nutrients?

the importance of mixed meals

Session 3:

the healthy plate

The amount we eat depends on our age, sex and time of life. A healthy meal should contain no more than 50 per cent staple (sadza, rice, potatoes, bread), 15 per cent protein (beans meat, eggs), a little fat (5 per cent) and the rest vitamins and minerals from vegetables and fruit. People should eat at least five different types of fruit and vegetables every day. Each day you should drink at least eight glasses of water.

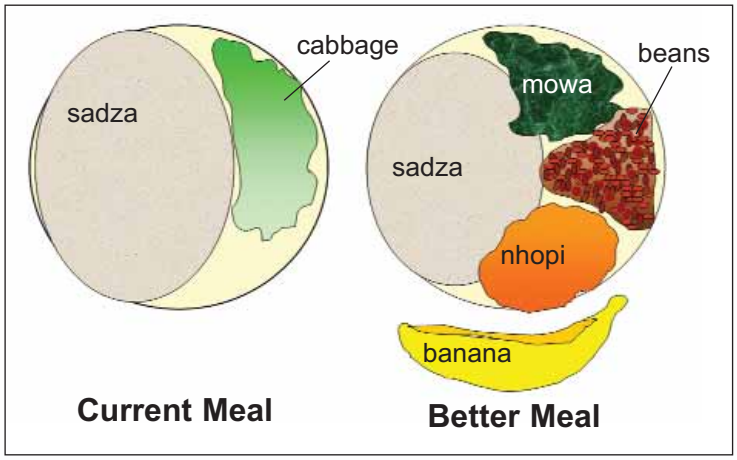
The nutrition needs of different people

Daily food requirements	Maize flour	Beans	Greens	Cooking oil
Family member	cups	cups	(teaspoonful)	(teaspoonful)
Child 2–3 years	1	½	16	6
Child 5–6 years	1¼	¾	20	6
Child 10–12 years	1½	1	20	6
Child 14–16 years	2	1¼	24	6
Woman (childbearing age)	2½	¾	20	8
Woman (pregnant)	2½	¾	22	8
Woman (breastfeeding)	2½	1	32	8
Elderly people	2	¾	22	8
Man (10–60)	3½	1½	22	8

1 cup = about 200 g

1 teaspoon = about 5 g

Sources: FAO 2001 and King & Burgess 1998.



Source: adapted from: Nordin, Low Input Food and Nutrition Security: growing and eating more using less Malawi World Food Programme, 2005

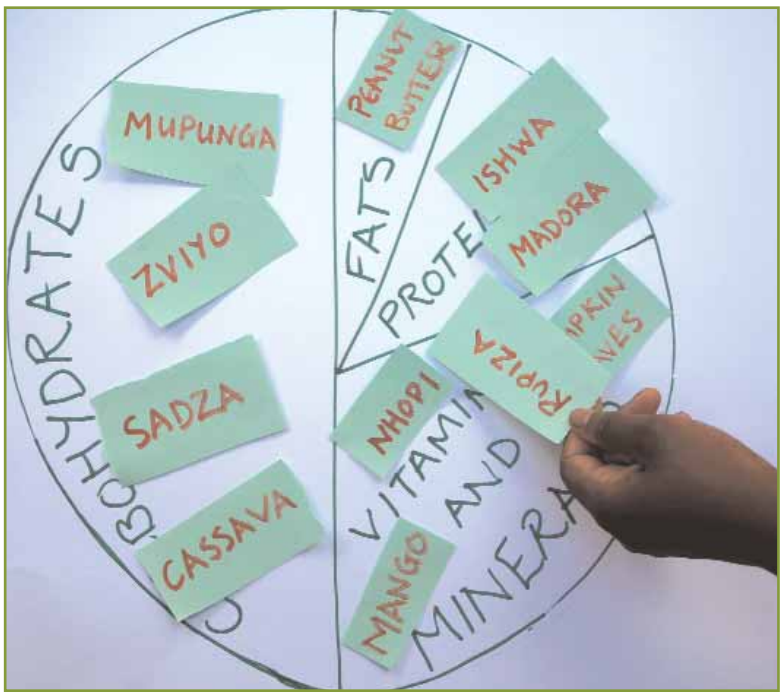
A healthy plate contains less staple and more variety

Activity

mixed meal game

Aim:

to help participants review the components of a healthy diet so as to get participants to start thinking in terms of healthy meals.



Materials needed:

Use the ingredient papers from the food and nutrient game in module 1 session 2 or make some more.

Time needed:

30 minutes

Divide the participants into groups. Ask each group to draw a large chalk plate on the floor in front of them. Ask volunteers to divide up the plate using chalk lines according to the proportions of each type of food that we need to eat in a healthy meal. Give each group some ingredients papers and ask them to create healthy meals on their chalk plates. If they are missing a particular ingredient they can try to trade ingredients with other groups. If they still can't find the ingredient that they need they can make one up.

Discussion

how healthy was our meal?

A good time for this discussion is just after one of the meals during the training course. Observe how much of the different food types the participants eat. After the meal have a discussion using the guide below:

- What kinds of healthy drinks can be taken with each meal?
- Was the meal healthy, mixed and balanced?
- Which different nutrients did you get from your meal?
- Who does not like eating vegetables?
- Name your favourite vegetables.
- Name your favourite fruit.
- How can we encourage families to eat a wider range of fruit and vegetables?
- How can we encourage families to eat enough protein?

Session 4:
challenges for urban communities

People living in towns and cities have stressful lives. People in town lack the space for growing food or keeping livestock. People who are working or at school do not have much time to prepare food and food is expensive to buy. Many of the wild foods that are available to rural people are not available to townspeople. Townspeople must take care of themselves by eating a healthy, balanced diet.

In Zimbabwe today many people are turning away from a healthy traditional diet because they think it is inferior to a western diet. This results in people eating less healthy food.

Discussion

a changing way of life

Read and discuss the following passage:

Less than 80 years ago, rural Zimbabweans were eating a rich and varied diet containing over 180 traditional food plants harvested from the wild or grown in gardens. Zimbabweans used to eat an average of 150 g of fibre per day from fruit, vegetables, pulses and unrefined grains. Traditional cooking methods used little fat, salt or sugar. Ash was used to soften green vegetables during cooking.

Today many Zimbabweans, especially in urban areas, commonly eat less than ten food plants. We consume less than 20 g of fibre per day and use unhealthy amounts of fat, salt and sugar. Overcooking and adding bicarbonate of soda are common practices that destroy many of the vitamins and minerals in fruit and vegetables. Most of the carbohydrates consumed are refined white starches such as refined maize porridge, white rice and white bread, from which much of the fibre, vitamins, minerals and protein have been removed.

Discussion cont'd

a changing way of life

In order to save money, many families have cut down on meat, fruit and vegetables and bulked up on staples, which tend to be cheaper. This is a dangerous practice which can stress the body and lead to an increase in illness as well as stunt growth in children.

Our modern eating habits are leading to diseases that were uncommon in the past, such as cancers of the digestive system, diabetes, high blood pressure and heart disease. Obesity and overweight are major problems world wide.

Discussion questions:

- Why do people living in towns and cities eat an unhealthy diet?
- What problems do urban families face in getting healthy food?
- What problems do rural families face?
- What can be done to help urban communities to have healthy diets?
- What causes obesity and overweight and what effects do they have.

Healthy food sources for people in towns and cities

Protein sources

- Grow climbing beans on fences and up walls.
- Grow pulses such as cow peas, ground-nuts, roundnuts, sugar beans and soya beans in summer between rows of maize.
- Grow pigeon peas as a windbreak around the garden.
- Grow lentils, chickpeas and shelled peas in winter.
- Grow green beans in beds all year round.
- Eat peanut butter and roasted ground-nuts.
- Eat animal and milk products regularly.

When you can afford it,

- eat liver as a good source of protein, vitamins and minerals.
- eat fish, termites and caterpillars: all good sources of protein and calcium.
- buy or make sour milk.
- keep small live stock. These animals will also provide manure, and chickens control pests in the garden.
- Give eggs to all family members, including children.

Carbohydrate sources

- Buy or grow whole grains such as maize, sorghum, millet and wheat and grind them at a local grinding mill. This is cheaper and healthier than eating refined meal or flour.
- Use the ground wholewheat flour to make your own bread, biscuits and cakes.
- Cook sorghum or millet porridge occa-sionally as an alternative to maize. It is high in fibre, vitamins and minerals.
- Grow cassava as a windbreak around the garden. Eat the tubers and leaves.
- Grow sweet potatoes, yam and wild rice in summer in water-logged areas. Plant Irish potatoes in winter.

Fat sources

- Grow pumpkins, sunflowers and sesame and collect, roast and eat the seed. They contain fat and protein.
- Plant groundnuts and make and eat peanut butter for fat and protein.
- Cook dishes with peanut butter.
- Plant avocados if you have space. They are a good source of fat, energy and vitamins A and C.

Vitamin and mineral sources

- Eat yellow, orange, red or dark green vegetables and fruit every day for vitamins (especially A, B, C and E) and minerals (especially calcium and iron) and fibre.
- Grow many different kinds of vegetables in your beds, including carrots, tomatoes, green beans, okra and spinach. Eat the healthy, dark green leaves of cow peas, sweet potatoes and cassava.
- Grow traditional vegetables such as amaranth and blackjack and also grow herbs to flavour cooking such as marjoram, basil, parsley, chives and thyme. Traditional vegetables and herbs are good sources of vitamin C and calcium. The strong smell of the herbs helps to repel pests in the garden.
- Grow cucumbers, pumpkins, chouchous and butternut squash on fences and up walls.
- Grow pawpaw, tree tomato and citrus trees amongst vegetable beds and in sunny places.
- Grow mangoes, Mexican apple and avocados on the south side of your garden if you have space.
- Grow fast-growing indigenous fruit trees in maize areas and along boundaries such as Ziziphus spp. (*masau*), *Syzigium* spp. (*mukute*) and *Azanza* (*mutohwe*).
- Grow mulberries, guava and banana trees on boundaries.
- Grow granadillas on fences and grapes on trellises.
- Grow strawberries in beds.
- Grow gooseberries and raspberries around the edges of gardens.

Cooking tips

- Cook vegetables for less than 8 minutes.
- To preserve vitamins and minerals, avoid using bicarbonate of soda for cooking vegetables.
- Eat plenty of fresh (uncooked) fruit for vitamin C every day.
- You can also dry fruit or make it into juice or jam.

Water

Drink at least eight glasses of clean water (boiled or filtered) each day. Avoid fizzy drinks and sugary drinks. Avoid drinking tea or coffee with a meal, as they can reduce absorption of iron from food. Instead, drink herb teas which help to stimulate the appetite.

Make herb teas. Grow small herbs such as marjoram, basil and thyme in beds. Grow larger herbs such as lippia (*zumbani*), rosemary, mint and lemongrass. Make and drink fruit juice. Plant fruit trees (orange, lemon, granadilla.)

Food to avoid

- too much salt – which is bad for blood pressure.
- too much sugar – which is bad for the heart, teeth and mouth (thrush).
- junk food and unhealthy snacks – sugary sweets, cakes, buns, white bread, oily or fatty food.

Session 5:
budgeting

Nutritious food such as meat, milk, dairy products and fruit cost a lot of money. Eating more staples than healthy ingredients may be cheaper, but this puts the family's health at risk. In the long run the family may end up spending more money on medicines because family members get sick all the time.

Avoid trying to save money by buying food that is old or smells bad or food, drinks and sweets containing a lot of sugar and colouring and processed foods.

Spending a bit more money occasionally on meat, fish, milk, eggs or beans and fruit is worth the expense because they contain important nutrients for your family. The best way to save money on food is to grow as much of your own fresh food as you can and, if possible, keep chickens for eggs and meat.

Cheap sources of protein include beans, groundnuts, roundnuts, soya mince, kapenta and caterpillars.

Discussion

Divide into groups. Ask participants to discuss ways of saving money without sacrificing a healthy diet. What are the cheapest sources of proteins in the community? How can families get vitamins and minerals without spending too much money?

how to save money but eat healthy food

Back yard chicken unit

Activity

Aim:

to give participants practice in cooking a variety of healthy protein–rich dishes

Materials needed:

ingredients, cooking utensils, source of heat for cooking, hot box cooker.

Time needed:

soak beans overnight, then cook for five hours in hot box cooker (for making a hot box cooker please see page 77.

making cheap, healthy protein-rich dishes

Soya mince

Ingredients

1 packet soya mince
2 small onions, chopped
1 medium tomato, sliced
oil

Method

Soak the soya mince for about 30 minutes in clean water. Drain and reserve the water for soup. Meanwhile fry the onions and tomatoes. Add the drained soya mince. Cook for 3–5 minutes.

Activity

Caterpillars (*madora*)

Ingredients
caterpillars
peanut butter
water
pinch of salt

Method

Boil the *caterpillars* with salt until they are soft. Drain, then dry roast. Alternatively, add onions, tomatoes and peanut butter and fry.

making cheap, healthy protein-rich dishes

Dried fish (*matemba*)

Ingredients
dried fish (kapenta)
peanut butter
tomatoes
onions

Method

Fry the onions and tomatoes, then add the peanut butter. Boil for five minutes, then add the kapenta. Simmer for two minutes. Be careful not to overcook. Serve with sadza.


Young people helping a householder

Session 6:
mixed menus

Discussion

mixed menus

Planning meals is a complicated process. This discussion helps participants understand who and what is involved in their own situation and for others in their community. Use these questions and any others you think of to structure the discussion:

- Who is in charge of cooking in the family? Usually it is the mother, but what about in single parent families? Child-headed families? Grandparent-headed families?
- What food is ripe in the garden?
- What ingredients are in the store cupboard?
- How much money do we have to buy extra ingredients?
- Is there water, fuel or electricity to cook the food?
- How much time do I have to make the meal?
- What can I cook that my family will like?
- What can I cook that is healthy?

Example of a healthy mixed menu for a family:

Monday

Morning meal: maize porridge with sour milk

Midday meal: *mutakura*

Evening meal: brown rice with peanut butter, cow pea relish and blackjack leaves cooked with tomato and onions

Tuesday

Morning meal: boiled egg, bananas and *mahewu*

Midday meal: sweet potatoes and caterpillars, pawpaw

Evening meal: sadza with pumpkin leaves, peanut butter and kapenta. Guavas for pudding

Wednesday

Morning meal: sweet potato biscuits and peanut butter

Midday meal: cassava, roundnuts and mangoes

Evening meal: sorghum porridge with *nhopi* and cow pea relish

Thursday

Morning meal: pawpaw and bananas, soda bread and margarine

Midday meal: yam and squash, roasted maize

Evening meal: soya mince and sadza with mixed vegetable relish

Friday

Morning meal: boiled egg, guavas and *mahewu*

Midday meal: *maputi*, roasted groundnuts and oranges

Evening meal: millet sadza with cassava and cow pea stew

Saturday

Morning meal: porridge and sour milk

Midday meal: *rupiza*, blackjack cooked in peanut butter

Evening meal: dried meat with peanut butter, pickled cucumber relish

Sunday

Morning meal: peanut biscuits and avocado

Midday meal: *mutakura*, *mahewu* and bananas

Evening meal: brown rice meal porridge, beef stew with green beans and carrots, okra

Session 7:
malnutrition in the family and community

When we are hungry our bodies tell us that we need to eat, but they do not tell us what we need to eat. Malnutrition results from not getting enough food or not getting the right type of nutrients from our food. This can occur because we are not eating enough or because we are eating plenty of food but it is not the right type.

Groups at risk

Children, pregnant and breastfeeding mothers and people with HIV and AIDS are the people most vulnerable to malnutrition. Malnutrition is one of the major causes of child mortality. Because of poor nutrition during pregnancy, 10 per cent of babies in Zimbabwe have a low birth weight (under 2.5 kg). This is one of the main causes of their sickness and death *(Government of Zimbabwe 1999)*. Thirty-six per cent of children under five in least developed countries are underweight. Forty-two per cent of children under five in these countries suffer from moderate or severe stunting through malnutrition *(unicef, 2006.)* Malnutrition makes children weak and affects their ability to learn. Children orphaned by HIV and AIDS may miss out at school and may lack the protection of a family, putting them at risk physically and mentally *(unicef, 2006.)*

Illness and malnutrition

Many illnesses, including diarrhoea, measles, TB and HIV/AIDS, can make the effects of malnutrition worse and vice versa. They stop the body from absorbing important nutrients and they also increase the body's need for more nutrients in the diet. People who are malnourished are more susceptible to diseases and infections. This is called the malnutrition–infection cycle. People who are ill need special diets. This is discussed more in Module 4.

Protein-Energy Malnutrition (PEM)

The main dietary causes of malnutrition are lack of protein, lack of carbohydrate and lack of fruit and vegetables containing vitamin A, iron and iodine. Lack of protein and energy foods is called protein-energy malnutrition or PEM. For a detailed look at the factors behind other causes of malnutrition see the problem tree on page 32 and the conceptual framework on page 26.

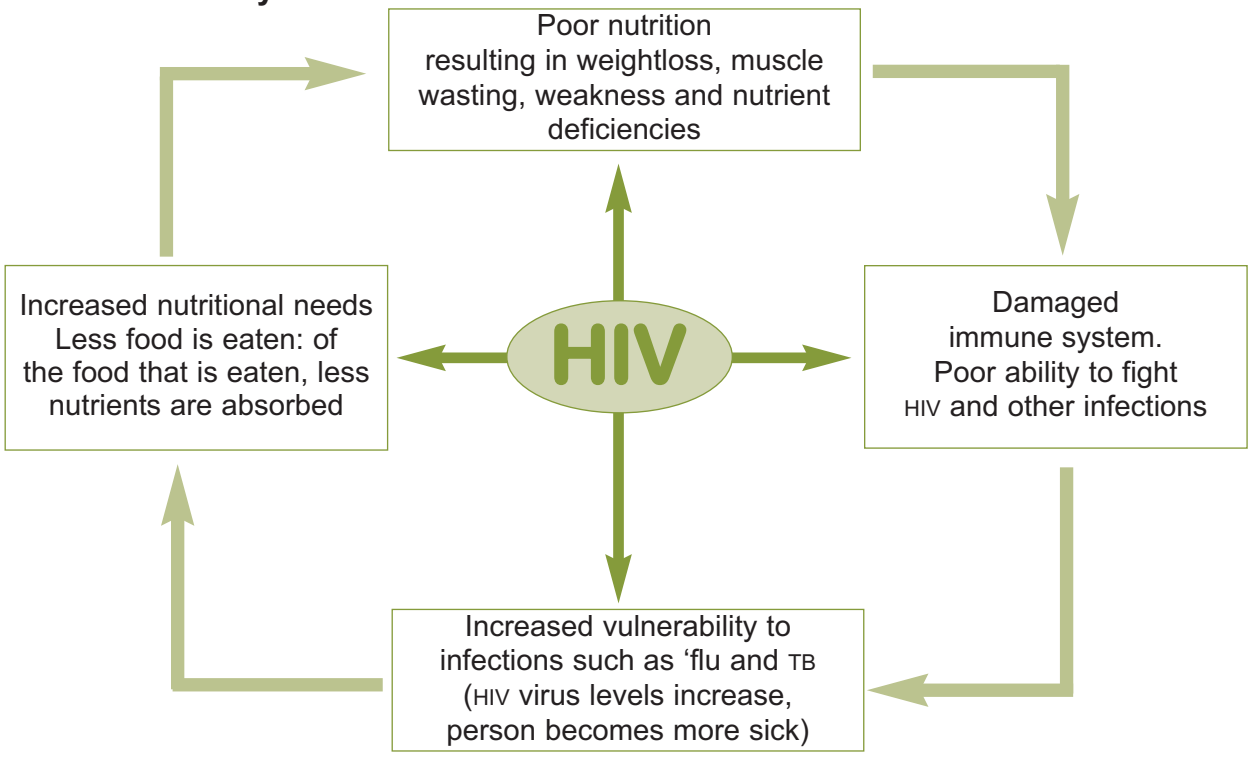
Symptoms of malnutrition

Stunted growth

If a pregnant woman gets a healthy, nutritious diet her baby is more likely to have a good birth weight. If the mother has a good diet while she is breastfeeding her baby, and if she breastfeeds for at least six months, she will improve the baby's chances of being well nourished and growing and developing properly. If the mother and baby do not get proper nutrition at these important stages the baby could suffer from a low birth weight, poor growth and risk from disease and illness.

Mothers must monitor their babies' growth from birth by taking them to the local clinic as often as the clinic recommends until they are over four years old. They must be weighed

Malnutrition–HIV Cycle



For more information on HIV and AIDS see Module 3, page 61.

and have their growth plotted on a growth chart. This helps families and health workers to make sure that the baby is growing properly.

Children should be given three healthy balanced meals a day with snacks in between.

PEM can have the following symptoms:

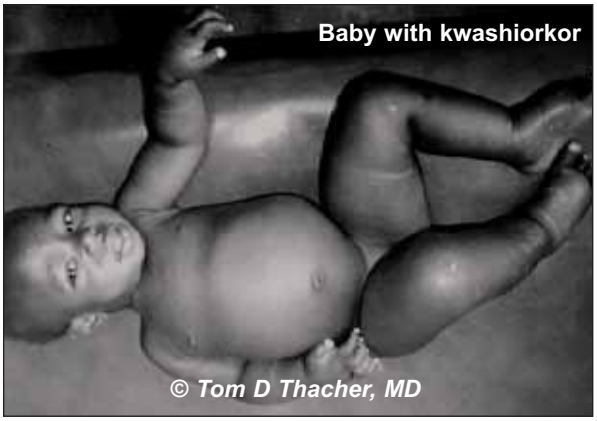
Marasmus

When children do not get enough energy-giving food their bodies become thin and they feel weak. Children with marasmus look old and wrinkled. Their skin is dry and their faces are thin, with sunken cheeks and large eyes. Their abdomen looks swollen. Children with marasmus often cry a lot and are liable to infections.


Child with marasmus

Kwashiorkor

When children do not get enough of the right kind of food, for example when they eat only mealie meal porridge, their bodies (especially their stomachs and legs) swell so that they look fat. Sores develop on their skin and it starts to peel off. Their skin becomes pale and they get sores at the corner of their mouths. Sometimes this weakness and other symptoms can affect their behaviour. Kwashiorkor children are very irritable. They cry a lot and do not want to eat. They often get diarrhoea. Marasmus and kwashiorkor symptoms can be combined. These conditions need to be treated medically and with a well-balanced, high-energy diet. A child suffering from these conditions need to be referred immediately to a health clinic.



Vitamin A deficiency

Vitamin A deficiency can occur when people do not eat enough foods containing vitamin A or fat. Vitamin A deficiency can cause night blindness and permanent damage to the eyes, blindness and even death. People at risk from vitamin A deficiency are mostly pregnant and breastfeeding mothers and children.

Breastfeeding mothers should eat food that is rich in vitamin A to ensure that their babies get a good supply. Families must also make sure that they get an adequate source of fat and oil. Good sources of these that can be grown at home include sunflower oil, nuts and seeds (groundnuts, roundnuts, sunflower seeds, pumpkin seeds), peanut butter and avocado.

Iodine deficiency

Since Zimbabwe is a landlocked country, we suffer from a lack of iodine in our diet. Iodine is found in fish that live in the sea. Iodine deficiency can cause growth problems in children and problems with brain development. All Zimbabweans should use iodised salt.

Iron deficiency

When people do not get enough iron in their diet, their blood becomes weak and cannot carry enough oxygen around the body. Iron deficiency is also called anaemia. Anaemia affects women and children in particular, as well as adolescents and the elderly. It makes people feel weak and slows down learning in children. Anaemia increases the risk of problems for mother and baby during and after delivery. Signs of anaemia include a pale tongue and inside of the lips, tiredness and breathlessness. Everyone should eat plenty of dark green leafy vegetables, offal (liver, kidney, heart), red meat, chicken and fish, legumes and cereals to treat and avoid anaemia.

In southern Africa, vitamin A is often low in people's diet because we have a long dry season when it is hard to grow vegetables. Traditionally, families overcame this problem by growing vegetables such as pumpkin and squash in the rainy season. These can be stored for long periods before being eaten. Families also dried vegetables for storage.

Families should grow vitamin A-rich food. such as soft, dark green, leafy vegetables such as amaranth, spinach, cow pea leaves, sweet potato leaves, pumpkin leaves, cassava leaves and blackjack leaves. Yellow and orange fruit and vegetables such as pumpkin, butternut, carrots, mango, pawpaw and many others are a good source of vitamin A.

Intestinal worms

Infections with worms, especially round-worms and hookworm, can cause poor appetite, poor digestion and absorption of nutrients. This may result in PEM, anaemia, Vitamin A deficiency and other malnutrition problems. Children should be treated with de-worming drugs every few months.

Activity

problem tree - the causes of malnutrition

Malnutrition can be caused by many factors, including environmental conditions such as a lack of clean water and poor sanitation, social factors such as a lack of education about nutrition and hygiene, fitness and poor access to health care and economic factors such as a lack of income and ability to buy food. Cultural beliefs may also play a part. For example, some communities believe that children should not eat eggs. It is important to discuss the causes of malnutrition in the community that you are working with so that they can identify and address these issues.

See also the conceptual framework overleaf.

Aims:

- to show that the causes of malnutrition are socio-economic, environmental and historical
- to help participants analyse the causes and effects of malnutrition in their community
- to explore with ways of dealing with some of the problems in their community.

Time needed:

Two hours.

Materials:

marker pens, A5-sized paper, or chalk on a blackboard or cement floor.

For this activity you could divide the participants into groups. One group could look at environmental factors, another could look at social factors and another could look at economic factors. Ask the groups to list the causes and effects of malnutrition in their community in relation to the factor that their group is discussing.

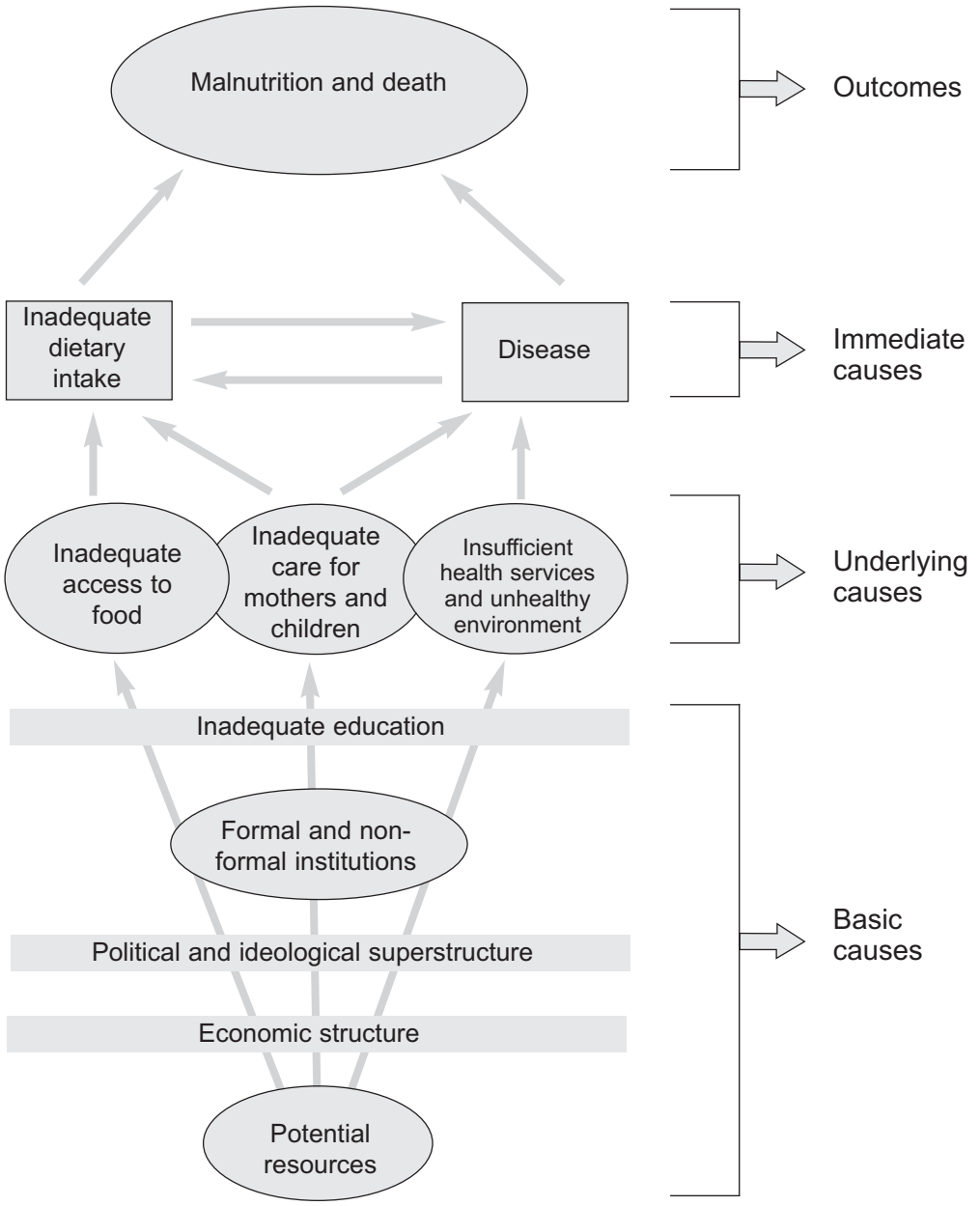
After 20 minutes come together as a class and arrange the causes and effects into a tree shape with the causes of malnutrition as the roots and the effects of malnutrition as the branches, like the problem tree shown in the diagram on page 32.

Have a discussion for about 20 minutes on whether some of the causes of malnutrition may actually be effects and vice versa. Try to come up with one or two root causes for malnutrition. When you are satisfied by the arrangement of the tree, spend about 20 minutes talking about how we can solve some of the problems associated with malnutrition in the local community.

Sources of vitamin A

Activity continued

nutrition conceptual framework



Source: UNICEF, 1990

Activity

malnutrition action plan

Aim:

to help participants to plan activities that address malnutrition in their community.

Materials needed:

paper, pens

Time needed:

at least one hour

First, list the goals of the participants. Ask them to list what they want to achieve by addressing malnutrition in their community.

Next, ask them to list the activities they need to carry out in order to achieve these goals. Then ask them to list the resources they will need for each activity, who in the group or family will be responsible for carrying out the activity and when the activity will be carried out.

Here is an example:

Goal:

to improve nutrition in the community by

- holding nutrition campaigns at our local schools, clinics and churches.
- setting up nutrition demonstration gardens in households, schools, churches and clinics.
- setting up nutrition clubs with community-based organisations such as home-based care volunteers, women's groups, church groups and young peoples clubs.

End the session by developing an action plan for addressing nutrition problems in the community.

Orphans and other vulnerable children feeding programmes

World AIDS day nutrition awareness demonstration

Activity	Resources needed	Who is responsible	Time schedule											
			M	A	M	J	J	A	S	O	N	D	J	F
Meeting representatives from community leaders	Invitations, venue, speakers on nutrition, a programme	Mrs Moyo and Mr Ncube	X											
Meetings with churches, schools, clinics etc.	Invitations, venue, speakers on nutrition, a programme	Mrs Banda Mrs Thembe		X	X	X	X							
Nutrition awareness days at St Patrick's Primary School	Ingredients, demonstrator, invitations, fire wood, pots and pans, plates and cups, drama group	The head teacher, Mrs Ncube			X									
Nutrition awareness day at Dombo clinic	As above	Health workers, Mrs Dube			X									
Nutrition awareness day at Mbizi Secondary School	As above	Head teacher, home economics teacher, agriculture teacher				X								
Set up nutrition demonstration garden at St Patrick's	Tools, seeds, seedlings, plants, herbs	Grades 5–7 nutrition group, SDA members, the groundsman			X	X	X	X	X					
Organise a visit to the new mothers' health club	Ingredients for demonstration	Mrs Ncube					X			X			X	

module TWO

growing nutritious food

OBJECTIVES

By the end of this training module participants should be able to

- understand the benefits of setting up nutrition gardens in their homes and community;
- identify different areas in their community where individuals, families and groups can set up nutrition gardens;
- understand the environmental, social and economic problems underlying food security and malnutrition and be able to identify ways of overcoming these problems in their community;
- identify useful nutritious crops and plan where and when they can be grown;
- design, plan and implement their own nutrition gardens using environmentally sustainable techniques.

Food security is defined as "a situation that exists when a family has sufficient safe and nutritious food throughout the year so that all members can meet their dietary needs and food preferences and have active and healthy lives.

FAO (2004)

Food and nutrition security

Food security depends on families having access to a nutritious, reliable food source all year round.

A nutrition garden is a place where crops are grown to satisfy the nutritional needs of the family and other groups in the community. These include their needs for carbohydrates, fats, protein, vitamins and minerals. Nutritious crops can be integrated into vegetable gardens, around the homestead, in orchards, in woodlots and in the field.

Session 1:

why do we need nutrition gardens?

Growing our own healthy food can help us to make sure that our families have healthy, balanced diets for optimum health and growth. Having our own nutrition garden can help us save money and generate an income from selling surplus produce. Nutrition gardens can also act as demonstration areas where we can show others how to develop their own gardens, using minimum inputs to produce a wide range of healthy food.

Young person helping to weed a garden

Activity

advantages and disadvantages of nutrition gardens

Aim:

to help participants identify the benefits of nutrition gardens and identify any challenges or disadvantages to such gardens that they can foresee.

Materials required:

pens and paper

Time needed:

20 minutes

Ask participants to list in groups the benefits and any disadvantages of establishing nutrition gardens in your community. After 10 minutes get each group to report back. Summarise the advantages and disadvantages each group has identified and discuss ways to address the disadvantages.

Session 2:
nutrition and food security

Because our world is changing, food production is becoming more and more difficult. Some of the problems that growers face include people moving into cities, climate change, soil infertility, lack of labour, economic problems and the lack of land.

By looking at the causes of some of these problems we can come up with ways to deal with them. Some of these ways come from the past from tried and tested traditional methods. Other ways come from science, which can help us to understand and work with natural processes.

Activity

food & nutrition security problem tree

Aim:

to help participants analyse the causes and effects of food insecurity in relation to household nutrition and come up with ways to deal with some of the problems in their community.

Materials:

marker pens, A5-sized paper, or chalk on a blackboard or cement floor.

Time needed:

two hours

Divide into groups and ask each group to discuss the causes and effects of lack of food security. Ask them to decide whether we need to address food security or nutrition security or both. Different groups could study different types of communities such as urban or rural areas. If they are using small pieces of paper, each cause and effect should be written on a separate piece.

After 20 minutes ask the groups to arrange the causes and effects into a tree shape, showing the causes of food insecurity as roots and the effects of food insecurity as the branches.

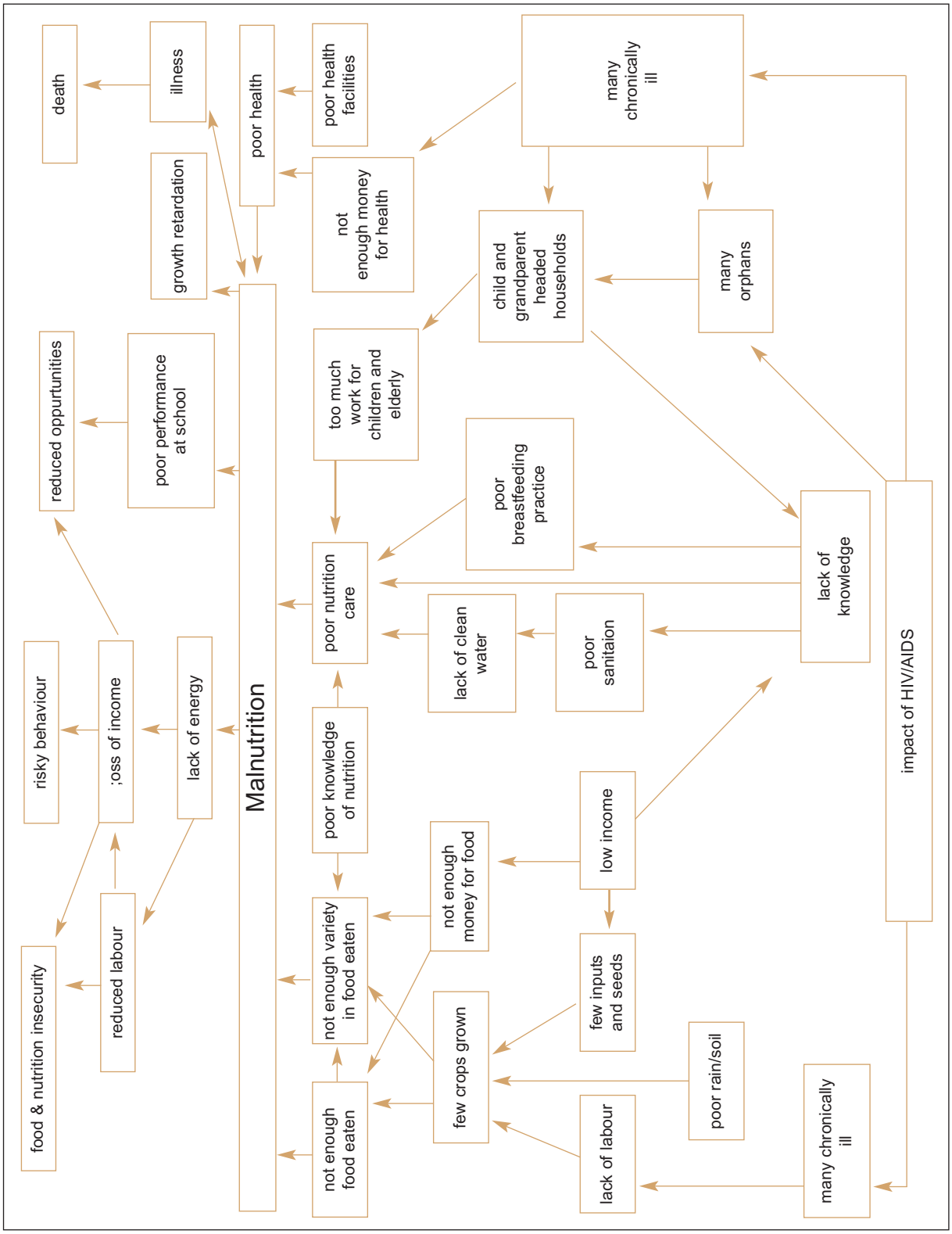
Hold a discussion for about 20 minutes on whether some of the causes of food insecurity may actually be effects and vice versa. Try to come up with one or two root causes for food insecurity. When you are satisfied by the arrangement of the tree, spend about 20 minutes talking about how we can find solutions to some of the problems associated with food security in our local community.

Break into groups according to the number of problems (causes) that you came up with. Give each group a problem to tackle. Get the group to list solutions. End the session by bringing together the problems and solutions in a table like the one shown on the next page.

Use the conceptual framework overleaf to help you develop the food and nutrition security problem tree.

Activity cont'd

problem tree - the causes of malnutrition



Activity cont'd

improving food production

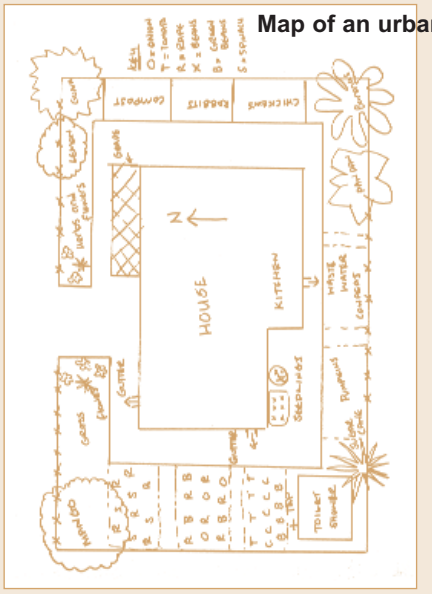
Problem	Solution
Soil erosion	• Protect the soil from impacts of people and livestock. • Plant trees and bunch grasses on slopes and on bare ground. • Make terraces and contour ridges on slopes. • Cultivate across the slope, not down it. • Avoid burning vegetation in order to prepare land. • Reduce tillage – practice conservation farming. • Cover soil with mulch. • Protect stream banks and water sources.
Soil infertility	• Intercrop with soil-improving plants such as legumes. • Use animal manure, compost and mulch. • Apply liquid manure. • Avoid using expensive fertilisers.
Lack of water	• Put water-loving crops close to the water source. • Plant windbreaks around gardens and fields to shade and protect crops. • Mulch all bare soil with organic matter such as crop residues. • Plant groundcover crops beneath taller crops to keep the soil moist. • Use drip irrigation if possible. • Harvest water from roads, roofs and slopes and sink it into the soil. • Protect stream banks, dams and wells from soil erosion.
Lack of land in urban areas	• Start a garden at your local school, church or community centre • Get permission from the municipality to grow crops on unused land. • Ask your landlord if you can use space to grow crops. • Plant crops in containers.
Lack of money	• Avoid using expensive pesticides and fertilisers. • Save your own seed. Buy open pollinated crops.
Lack of labour	• Practice intercropping to reduce the need for soil improvement, pest and disease control and weeding. • Use mulch, drip irrigation or bottle watering to reduce watering time.
Pest problems	• Avoid expensive and harmful pesticides. • Practice intercropping with a wide range of different crops. • Plant herbs around the edge of the garden to repel pests. • Make your own safe sprays using strong-smelling substances such as chilli and garlic, pawpaw leaves and castor-bean leaves.
Lack of security	• Plant live fences around your garden and cropping area. • Use soil-improving plants and fast growing trees as wind breaks. • Make grass fences around the plots until the trees have grown up.

Session 3:
planning nutrition gardens

Nutrition gardens can be set up at household level, at community level, in schools, around churches and in fields. Ask participants to divide into groups and identify areas in their community where they are going to set up gardens.

Making maps

Making maps is a good way for people to look at the environmental resources that are available to them. They show the potential and disadvantages of an area clearly, helping people to understand their own situation. Groups studying the map together can discuss and solve the problems the maps identify. Maps can be used to help in planning where to put a nutrition garden and how to integrate nutritious crops in different areas, including the fields, around the homestead or near water sources. You can map a community, a school and a household garden.



Map of an urban yard

Activity

making maps

Aim:

to help participants assess the resources (including the amount of land, water, quality of soil and crops) that are available to them and identify any problems (e.g. lack of security, water) on it.

Materials needed:

maps can be made on the ground or on paper, depending on the resources that are available

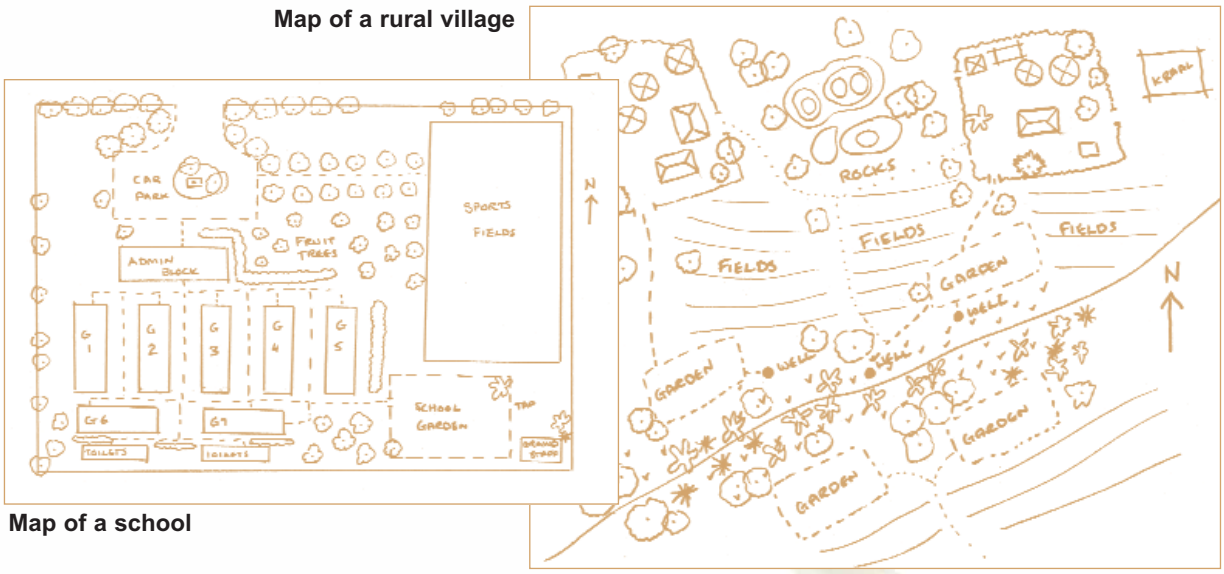
Time needed:

at least one hour

Divide the participants into groups. Some can make individual household maps and some can make group maps of an area such as a school or community centre where they want to establish a garden.

Guide them on how to make the maps. Explain that the map has to be a simple plan, not an art work. Get them to use simple symbols for buildings, trees and crops rather than pictures. Talk about scale. How big is a tree in relation to a house? How long is the boundary fence? This will help them to locate things accurately on the map. Get them to show all the resources they can use, such as water sources, vegetation, cropping areas, fences, roads, buildings and slopes.

Map of a rural village



Map of a school

Session 4:
setting goals

A goal is a statement of something that we want to achieve. This session helps participants to identify what they want to achieve after they have completed the training. Goals help participants to visualise their success and this helps them to use the training they have received to actually implement a garden or nutrition awareness programme in their community. By identifying clear goals participants will be able to develop action plans in the next session.

Activity

goal formation

Aim:

to help participants to form clear goals to help them plan their gardens, monitor and evaluate their progress.

Materials needed:

pen and paper or chalk and blackboard

Time needed:

30 minutes

The garden provides more benefits than healthy crops. Your garden will help you to help your community. Remind participants that if they want to maintain a healthy nutrition garden they need goals about maintaining and improving their land. These include soil and water conservation goals and pest- and disease-management goals.

Examples of some production goals:

- To improve my family's nutrition by growing a wide range of healthy vegetables all year round.
- To help less fortunate people in my community by giving them seedlings to help them set up their own gardens
- To protect my soil and water resources by practicing good growing methods.
- To generate an income by selling surplus produce.
- To have food all year round by drying and preserving the fruit and vegetables I grow.

Session 5:
choosing the right crops

By planting many different crops for harvesting at different times of year you will have a garden all year round. If you include plants that live for more than one year, such as *moringa*, pigeon pea, cassava and fruit trees, then your food security will be improved.

Moringa is a tough, fast-growing tree that produces very nutritious edible leaves and pods. It can also be used for live fencing. The seeds can be used to purify water. Pigeon pea is a tough bush which lives for about four years. It produces nutritious seeds and the plant helps to improve the soil. Cassava is a tough bush which can live for two to four years. The roots and leaves may be eaten. See Cassava Precautions on page 63.


Moringa


Pigeon pea


Cassava

Please note that moringa is not a medicinal plant and only the green pods, leaves and flowers should be eaten as a nutritional supplement.

Activity

Aim:

to list nutritious healthy crops which can be grown in different areas and identify the areas where they can be grown according to their needs.

Time needed:

one hour

Materials:

flip chart paper and marker pens, or chalk and blackboard, or cement floor

Divide into groups. Give each group a food type to work on from:

crop list

- carbohydrate–rich crops
- fat-giving crops
- protein–rich plants
- protein–rich animals
- fruit crops
- vegetable crops

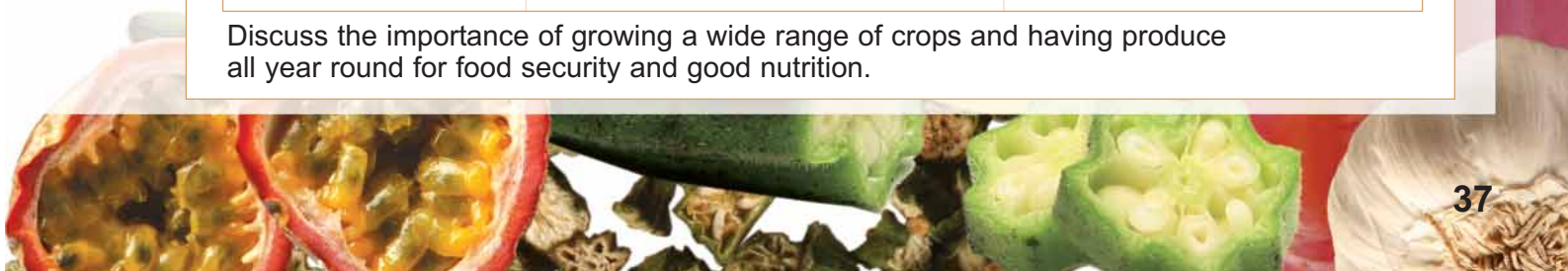
Ask each group to list suitable crops and the different areas where they can be grown, such as near the homestead, in the vegetable garden, in the fields. Also ask them to list the time of year that they can be grown. During the report back, develop a table like the one on the next page (but it must be relevant to the region that you are working in).

Activity cont'd

crop list

Name of crop	Growing area	Time of year they can be grown
Energy–rich food		
millet	fields	rainy season
sorghum	fields	rainy season
rice	wetlands	rainy season
yam (*madhumbe*)	wetlands and gardens	all year
cassava	around fields and gardens	all year
sweet potato	wetlands and vegetable gardens	all year
potato	gardens	cool dry season in hot areas
Fat–rich food		
sunflower	fields	rainy season
groundnut	fields	rainy season
Protein–rich food		
roundnut	fields and vegetable gardens	rainy season
pigeon pea	around fields and gardens	all year
sugar bean	with grain crops in fields and in gardens	all year
soya bean	with grain crops in fields and in gardens	all year
butter bean	on fences and walls around gardens	all year
cow pea	with grain crops in fields and in gardens	all year
groundnut	with grain crops in fields and in gardens	rainy season
Vitamin and Mineral–rich		
tomato	gardens	all year, but dislikes frost & too much rain
carrot	gardens	all year
onion	gardens	all year round but prefers cool weather
green bean	gardens and fields	all year
spinach	gardens	all year, but dislikes too much rain
garlic	gardens	winter
gooseberry	gardens and fields	all year
melon	gardens and fields	rainy season
okra	gardens and fields	rainy season
pumpkin	gardens and fields	all year, except very cold times
butternut and squash	gardens and fields	all year, except very cold times
amaranth *(mowa, bongwe)*	gardens and fields	all year
blackjack	gardens and fields	all year
cat's whiskers *(nyevhe, ulede)*	gardens and fields	rainy season
strawberry	gardens	all year
moringa	fields and around gardens or homestead	all year
brassicas (rape, covo,		
tsunga)	gardens	all year, especially in the cold season
pineapple	gardens	rainy season
granadilla	gardens on fences and walls	all year
citrus	near homestead	all year
guava	near homestead, around fields,	
	in gardens or near rivers all year	
banana	near homestead and near rivers	all year
pawpaw	in gardens, near homestead	all year
mulberry	round fields, near homestead, around gardens	all year

Discuss the importance of growing a wide range of crops and having produce all year round for food security and good nutrition.



Session 6:
healthy fields

Integrating a range of crops into fields

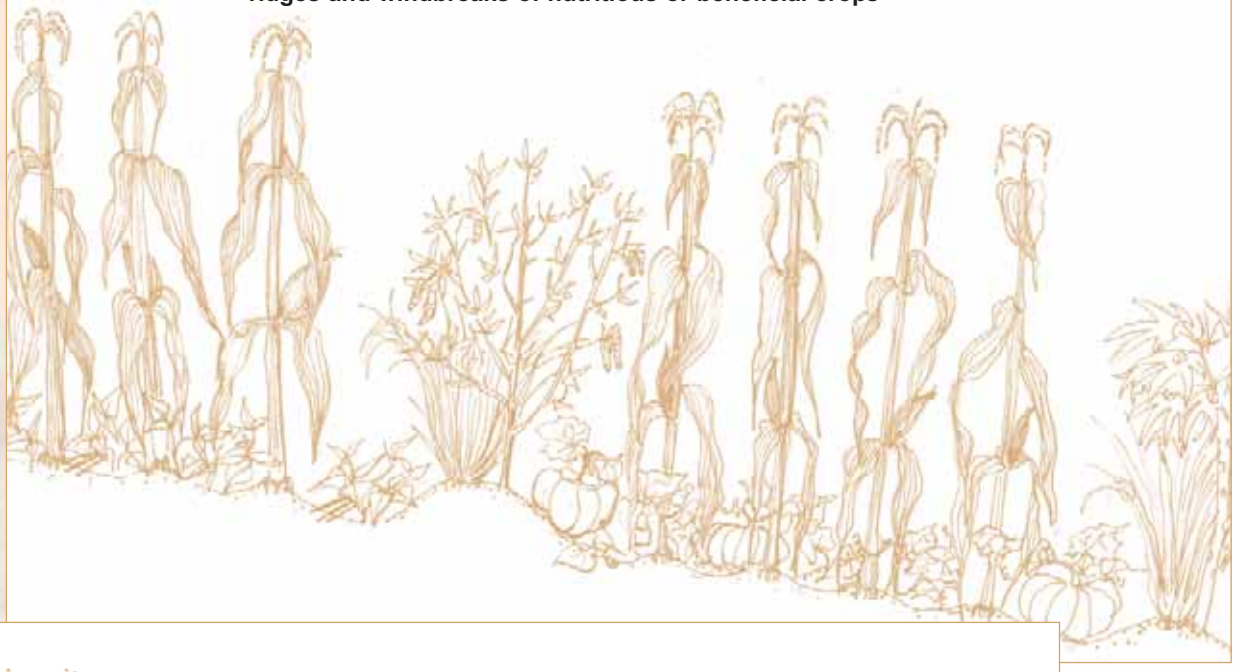
Fields can be important sources of nutrients during the rainy season but it is important to encourage families not to neglect the vegetable garden at the expense of the annual crops. It is also important to include perennial crops in the fields such as cassava, pigeon pea and *moringa*. A variety of grains (including millet and sorghum) should be grown for improved nutrition as well as crop security. If the rains are poor then at least some crops will survive.

Management of resources in fields

In order to maintain productivity the land resources must be carefully conserved and managed. Soil must be protected from erosion with contour ridges. Minimum-tillage methods such as conservation farming should be used to reduce erosion and improve the content of organic matter in the soil. Strips of dense crops such as finger millet planted between rows of maize and other grains also help to reduce run-off.

Planting groundcover crops beneath taller grain crops can reduce water loss from fields. See table on page 33 for more information on conserving resources.

Idealised field with a variety of nutritious crops integrated. Contour ridges and windbreaks of nutritious or beneficial crops



Strips of dense crops between strips of grain

Activity

conservation farming demonstration

Aim:

to develop a demonstration plot to show how conservation farming can conserve soil and water resources; reduce the need for weeding and pest- and disease-management and increase yields.

Materials needed:

hoe, string, measuring stick, 500g jar, cattle manure, grain, legume and pumpkin seed.

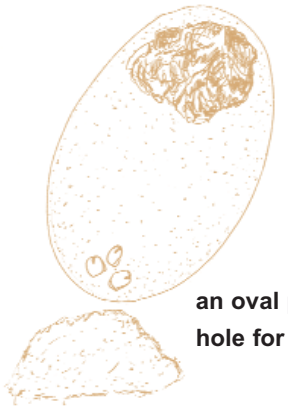
Time needed:

depends on the time of year, but this activity will take a few days.

Conservation farming can increase your grain yields and help improve soil and water resources. If you practise intercropping this method can help to reduce pests and diseases as well as weeds. Conservation farming involves using hoes to make planting stations. No ploughing is used and crop residues are left on the soil after harvesting. This means that the land must be protected from livestock.

Steps:

- Clear the land of vegetation and roots by hand. Flatten crop residues and make weeds into compost.
- If the land is sloping, make contour ridges across the slope at regular intervals.
- In September and October make planting lines with hoes across the slope.
- For maize, sunflower and cotton, the rows should be 75 cm apart. Sorghum, millet, groundnuts, roundnuts and soya beans need furrows.
- Make planting holes 60 cm apart along the rows. In low rainfall regions, plant spacing should be increased. Planting furrows should be 5 cm deep and made with a hoe.



an oval planting hole for maize

- If manure is available, it should be applied at a rate of a 500 g jam tin per planting hole, away from the eventual seed location.
- The most reliable date for planting is on or before 25th November. You can consider planting earlier if over 100 mm of rain has fallen.
- Plant on sandy soil within two days after rain, and on clay soil plant within four days.
- Place two seeds close together in one side of the planting hole, about 7.5 cm away from the manure. Cover the seeds with about 2–3 cm of soft soil.
- Plant beans and pumpkins in between the grain rows about three weeks after the maize shoots emerge. Sunflower and soya beans should be planted by mid-December. Sorghum can be planted with maize, or later on with sunflower and soya beans.
- Keep weeds under control and top dress with 500 g cattle manure or one cup of liquid manure per planting station.

Session 7:
healthy gardens

In order to have a wide range of fruit and vegetables for all year round nutrition we need to plant many different crops in our gardens.

Integrate a wide range of fruit and vegetables. In order to save space, water and expensive inputs we should intercrop our vegetables. This means planting different crops in the same bed. Intercropping can benefit plants. If we intercrop strong smelling onions and garlic with other vegetables, their smell will help to repel pests. If we intercrop beans with other vegetables, they will help to improve the soil. If we plant low-growing crops such as beans and carrots in between tall crops such as covo and tomatoes the shorter crops will help to cover the soil, reducing the need for weeding and saving on the amount of water that is needed.

Herbs

Herbs can be useful for soothing the symptoms of illness (see also module three and appendix five). They can also be used in the garden as many strong-smelling plants repel pests and can be made into repellent sprays or powders.

Plant large herbs which take up a lot of space around the edge of the garden. Examples of these are lavender, rosemary, lemon grass, *zumbani* and rue.

Small herbs such as basil, thyme, chives, parsley and sage can be included in the vegetable beds.

Intercropped beds

Activity

intercropping demonstration

Aim:

to help participants plant intercropped beds with vegetables, herbs and other useful plants.

Resources needed:

- A suitable area of land that is protected from livestock.
- Reliable water.
- Someone who is going to look after the garden after the training – preferably one of the course participants.
- Tools, dried grass, leaves and compost.
- A variety of vegetable seedlings: tomatoes, spinach, onions and rape, yam, gooseberry, sweet potato cuttings.
- Vegetable seeds of green beans, groundnuts, cow peas, roundnuts, carrots, pumpkin and butternut, seedlings of small and large herbs.
- Useful tree seedlings: pigeon pea, cassava, *moringa*, *sesbania*, leuceana. If fences or walls exist, then climbing beans, grape or granadilla can be included. Useful fruit trees: tree tomato, pawpaw, mulberry, guava, citrus and dwarf banana.

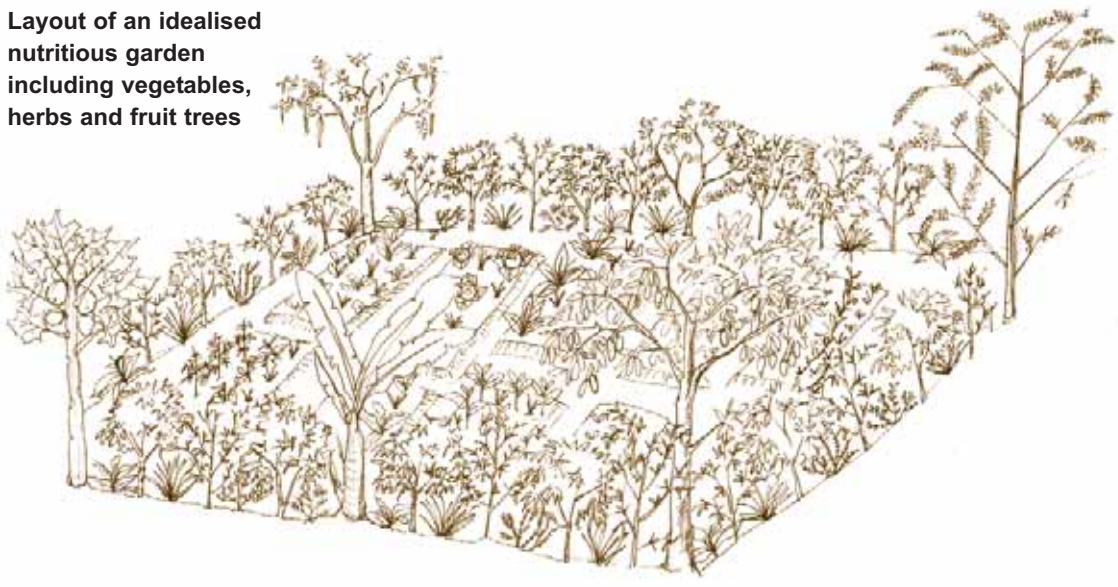
Time needed:

at least two hours

First ask participants to look at the area and decide on the best way to construct the beds. On sloping land beds must be made across the slope. If the soil is clay make raised beds for drainage. If the soil is sandy beds can be loosened but not raised. Short crops should be planted between tall ones 10–15 cm apart. Carrot and onion seeds can be planted in rows. Each bed should contain beans for soil improvement.

Plant a windbreak of useful plants and large herbs around the edge of the garden. Small herbs can be planted in beds. The fruit trees should be planted on the south boundary of the garden so they do not shade the vegetables. After planting, water the beds and cover with a layer of compost or mulch.

Layout of an idealised nutritious garden including vegetables, herbs and fruit trees



Session 8:

improving the soil

When you grow plants they take nutrients out of the soil. When you harvest crops you must put back into the soil what you have taken out in the form of nutrition for your family.

Fertiliser is expensive and does not improve the soil structure or its ability to store nutrients. For long-term soil improvement the following ways are best:

Intercrop vegetables and grains with legumes such as beans, groundnuts, roundnuts and cow peas. Plant soil-improving trees such as sesbania, leuceana and pigeon pea around the garden.

Make compost from weeds, grass, leaves and kitchen scraps. You do not have to have manure to make compost – you can use green leaves. Leaves of banana, amaranth, lantana, castor bean and comfrey can be added to compost if manure is not available. Apply compost on the surface of the soil.

Make liquid manure for heavy feeding crops such as cabbage, rape, covo, tomatoes, potatoes, peppers, pumpkins, melons, cucumbers and maize.

Activity

making liquid manure

Aim:

to offer participants a simple, practical method for feeding crops.

Materials needed:

a plastic container with
a lid, green leaves of plants such as castor bean, amaranth, comfrey or pigeon pea.

Time needed:

20 minutes

Pack the leaves into the container until it is three-quarters full. Add a small amount of water. Close the lid of the container but do not tighten it. Explain to the participants that the leaves will take about two weeks to rot and turn liquid. Once the liquid has formed, it smells very strong and is too strong to be used straight onto plants. It should be diluted with plenty of water until it smells less (about one part liquid manure to five parts water for most crops). Liquid manure can also be used for feeding seedlings but it should be diluted (one part liquid manure to 10 parts water). Warn participants that liquid manure can make plants grow very fast and this may make their leaves large and soft and attractive to pests and diseases.

Session 9:

saving water

Watering can be reduced by

- planting a windbreak of useful plants around the garden to shade the crops.
- harvesting water from slopes, roads, roofs and rocky outcrops and collecting it for irrigation or channelling it underground.
- covering the bare soil with a layer of mulch.
- planting short crops between tall ones to cover the soil.
- using bottle watering or drip irrigation.
- planting vegetables in containers filled with soil.


Mulching

Bottle watering

Demonstration:

container garden and bottle watering

Before the demonstration prepare a container or growbag garden using a sack filled with soil and with vegetable seedlings growing in it. Fill an old bottle with water. Push the bottle into the soil next to the container to show how the water is slowly sucked into the soil to be used by the plant when it needs it.

Session 10:

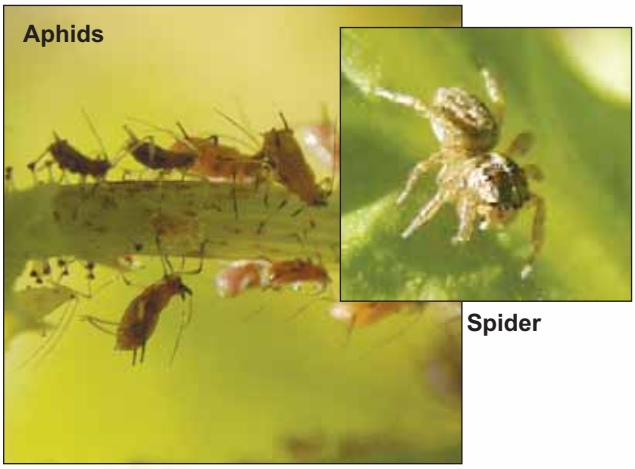
controlling pests and diseases

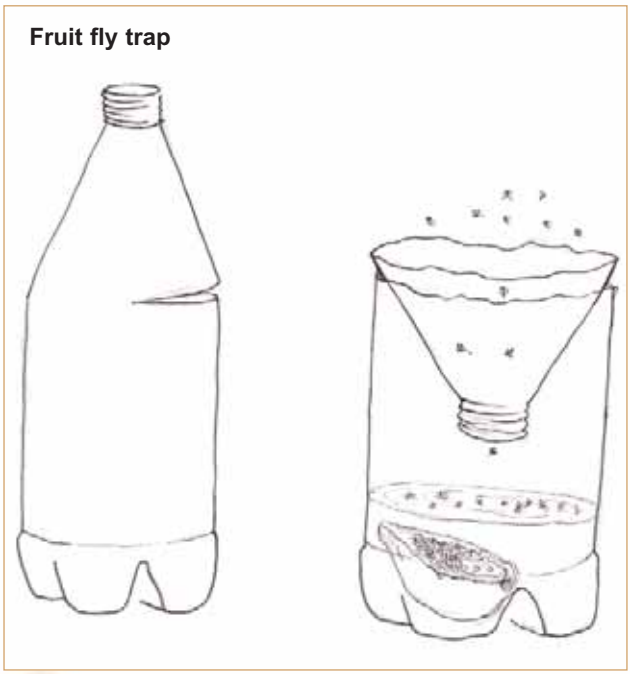
The following methods will help prevent pest and disease attack:

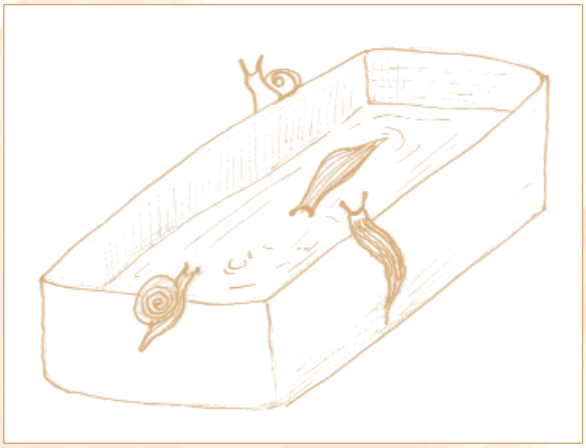
- Keep plants strong and healthy by giving them enough nutrients and water.
- Make trellises for tall plants so they do not touch the damp ground.
- Make windbreaks around gardens to help prevent pests and diseases (many of which are spread by the wind).
- Do not plant crops of the same family in the same bed such as rape, covo, cabbage and *tsunga*, or tomatoes and potatoes.
- Intercrop with at least four different crops in each bed so pests and diseases do not build up.
- Avoid using chemical sprays which kill beneficial insects such as spiders, ladybirds, preying mantises and bees; all of which are good for your garden.
- Use ash or spiky grass to mulch around plants.

If plants are affected by pests

- Cover the stalks of fruit trees and tall crops with Vaseline to stop pests climbing the stalks.
- Make a spray out of chilli and garlic, castor bean leaves or pawpaw leaves. This kills most sucking pests. Pour a castor bean or pawpaw leaf spray on the soil to kill soil pests.
- Make fruit-fly traps for pumpkins, butternuts and fruit trees.
- Make beer traps for slugs and snails.







Demonstration:

insect traps

Using old plastic bottles and the illustration above, show participants how to make fruit-fly traps and beer traps.

Activity

making chilli and garlic spray

Aim:

to help participants make a simple, multi-purpose spray for their gardens.

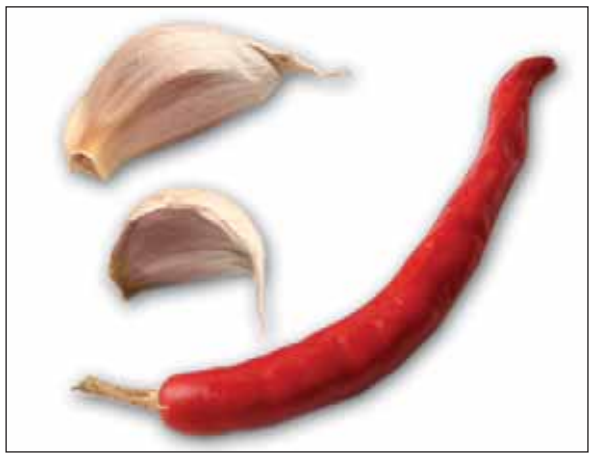
Materials:

5 chillies or half a teaspoon of chilli powder, 5 cloves of garlic, a tablespoon of dishwashing soap or green soap, 1 l of boiling water, a plastic container.

Time needed:

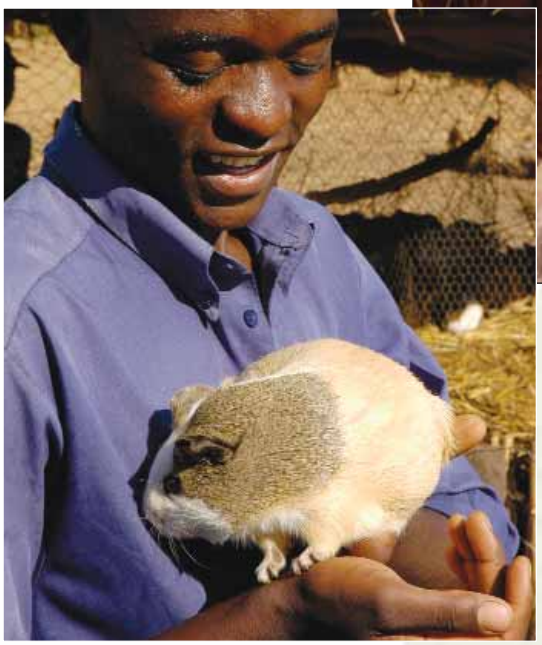
10 minutes to prepare. Leave overnight and use the next day.

Chop the chillies and crush the garlic. Soak in boiling water overnight. The next day remove the chillies and garlic from the liquid. Add the soap. Shake until bubbles appear. Apply the liquid to affected plants by brushing it on with a plant leaf.



Session 11:
the garden action plan

Action plans help families and communities to plan what activities to carry out in order to achieve their goals. Action plans are particularly important for groups working together, such as a nutrition club at a community centre or a group setting up a nutrition garden at a school.



Small livestock, such as guineapigs and rabbits, is a good source of protein

Activity

making a garden action plan

Aim:

to help participants plan activities that they are going to implement in order to have a successful, productive garden.

Materials:
paper and pens

Time needed:
at least one hour

Review with participants the goals they developed in the goal formation activity. Next ask them to list the activities they need to carry to achieve these goals. Then ask them to list the resources they will need for each activity, identify who in the group or family will be responsible for carrying out the activity and when the activity will be carried out.

Here is an example

Goal:

to improve my family's nutrition by growing a wide range of healthy vegetables all year round.

Action plan

Activity	Resources needed	Who is responsible	Time schedule											
			J	F	M	A	M	J	J	A	S	O	N	D
Make a list of nutritious crops we want to grow and when we want to plant them	Paper and pen	The nutrition goup	X											
Buy seeds	Money and transport	Mrs Chitima	X											
Prepare seedling containers	Containers, sand, soil and compost	Mrs Gweshe	X											
Prepare beds	Hoe and compost	Chipo and Farai	X											
Plant seeds for rainy season crops	Small hoe, mulch and water	Mrs Chitima and Mrs Gweshe	X	X								X	X	X
Plant seeds for dry-season crops	Small hoe, mulch and water	Mr Kunaka and Mrs Sithole		X	X	X	X	X	X	X	X			
Transplant seedlings	Small hoe, mulch and water	Mrs Chitima		X		X		X		X		X		X
Harvest produce	Basket and sharp knife	Mrs Chitima and Mrs Sithole			X	X	X	X	X	X	X	X	X	X
Make compost	Tools, leaves, grass, weeds, kitchen scraps, water	Farai and Chipo			X			X			X		X	
Mulch beds	Dry grass, leaves or compost	Farai and Chipo		X		X		X		X		X		X

Explain that the participants can make action plans for different goals such as one for implementing a nutrition-awareness campaign at a local school or one for organising a community outreach programme in nutrition for vulnerable families.

module THREE

OBJECTIVES

By the end of this training module participants should be able to

- explain the different nutritional requirements for babies, children, women and the elderly;
- prepare meals for people suffering from digestive problems, respiratory problems, irritating infections and HIV and AIDS.
- understand the issues surrounding the medicinal use of herbs.

Session 1:
infant feeding

Benefits of Breastfeeding

Experts agree that there are many benefits of exclusive breast feeding for the first six months of an infant's life. The benefits include:

- Nutrients in breast milk perfectly match a baby's nutrient requirements for the first six months of life
- Breast milk provides immunological protection from disease and helps build up immunity against infections
- There is bonding between mother and baby
- If the mother is exclusively breastfeeding on demand, there is a substantial contraceptive effect

For babies of HIV – positive women who know their status, there is need for infant feeding counseling by a trained health worker. Zimbabwe Guidelines for Infant Feeding in the context of HIV advice that women should be counselled to exclusively use one of the following options:

- Exclusive breast feeding for the first six months of life
- Commercial infant formula
- Modified animal (goat or cow) milk
- Heat treated expressed breast milk

Mothers should weigh their babies regularly at the local clinic to monitor their growth

Solids and other liquids should only be introduced from 6 months onwards. Mothers who are HIV–negative or who do not know their status should continue to breastfeed up to 24 months or beyond unless counselled otherwise by a trained health worker.

Complementary Feeding

Complementary foods are foods that are gradually added to a baby's diet from 6 months onwards. Complementary foods can be modified from the family pot and prepared so they are easy for the baby to chew and swallow. They have to be rich in proteins, energy, vitamins and minerals to meet the baby's increasing nutrient needs. Children aged six months to five years should receive vitamin A supplements from their nearest health facilities once every six months to prevent vitamin A deficiency.

Healthy first foods
Once babies have got used to the idea of solids and are still being breastfed they can be introduced to a wider range of food. Here are some examples:

Enriched porridge
Maize or sorghum flour enriched with peanut butter. Serve it with sour milk for babies over 12 months old.

Rice and pumpkin
Mix cooked brown rice with mashed bean and cooked pumpkin. For small babies mash the bean skin and rice to make sure the baby does not choke.

Vegetable mash
Mash potato or sweet potato and mix in mashed vegetables such as pumpkin and add peanut butter.

Fruit mash
Mash a mixture of fruit together.

Avocado mixed with peanut butter

Healthy drinks
Healthy drinks for babies include homemade fruit juice, sour milk or mahewu. Avoid fizzy or sugary drinks: these are bad for babies and young children.

Food for older babies and toddlers

By 12 months the baby can be eating the same food as the rest of the family. As babies get older, mothers can introduce finger food and foods that are mashed less.

Examples of food that the baby can hold and snack on include sweet potatoes, squash and cassava.

Soda bread with different toppings

Activity

complementary foods

Aim:

to help participants decide on which kinds of foods should be given to babies to introduce them to solid foods.

Materials: pens and paper

Time needed: 30 minutes

Divide participants into groups. Give different groups different tasks; for instance, ask one group to design an awareness poster for a clinic about the importance of breastfeeding. Ask another group to make a list of useful recipes for rural mothers who want to start introducing their babies to solids; ask another group to design a one-page information leaflet for urban mothers on what to avoid giving their six- to 12-month-old babies and what healthy, nutritious food they should be given. The last group could be asked to develop a menu for the babies and toddlers at an orphanage. At the end of the activity give each group time to report back and discuss their findings.

Session 2:
food for three- to five-year-olds

Children of this age group do not need to eat as often as babies but they must have at least three meals a day, preferably with two snacks in between. Children need a healthy, balanced diet that is rich in energy food, body-building food and protective food.

Children need plenty of vitamin A, iron and vitamin C so they should eat dark green vegetables, fruit and yellow and orange vegetables.

Activity

preparing first foods

Aim:

to give participants practical experience of making infant and toddler foods.

Materials needed:

ingredients (depending on the dishes you would like to prepare), cooking utensils, including a knife and board for chopping and a potato masher or a fork, a fire or a cooker for cooking the meal.

Time needed:

at least one hour,
according to the food type.

Before handling the food discuss the importance of hygiene in food preparation. Ask the participants what they should do to preserve the nutrients in the food during cooking. Review the reasons why babies and toddlers need different kinds of food to older children and adults.

Pumpkin cooked in peanut butter (*nhopi*)

Ingredients

pumpkin (*nhanga* or *shamba*) or butternut

peanut butter

½ cup of water

maize meal or cooked mashed sweet potatoes to thicken

Method

Wash and peel the pumpkin. Cut into cubes. Boil until soft. Add maize meal to thicken if the pumpkin is watery. Add peanut butter. Simmer for 20 minutes. Serve as a snack in between meals, without sadza, or hot, with sadza.


Nhopi

Sweet potatoes (*mbambaira*)

Ingredients

4 large sweet potatoes (yellow sweet potatoes contain more vitamins than pale ones.)

Method

Wash or wipe the potatoes clean but leave the skin on. Boil the sweet potatoes whole until soft.

Squash (*mapudzi*)

Prepare in the same way as sweet potatoes. Remember to keep the skin on.

Yam (*madhumbe*)

As for sweet potatoes. Eat with the skin on unless it is very rough or dirty.

Avocado dip

Avocados are an extremely nutritious fruit. They can be eaten fresh or mashed and spread on bread. You can enhance the taste by mixing it with lemon juice, pepper and peanut butter.

Session 3:
food for school children

Children over the age of five are at less risk of malnutrition than babies and toddlers but they still need a healthy, balanced diet and at least three meals per day. A good diet helps school-aged children to

- grow and develop properly and become healthy adults,
- concentrate on their school work,
- be happy and healthy,
- learn about the importance of good food by seeing the good examples of their parents.

Children at risk from malnutrition are children who are orphaned or who come from

- poor families,
- single-parent families, child-headed or grandparent-headed households,
- refugees
- towns and cities
- rural areas which have experienced food shortages or drought.

School-aged children need two to three healthy mixed meals per day. Snacks between meals are healthy for teenagers (between the ages of 11 and 16) who are growing fast.

The morning meal

Before they go to school or work, children must eat a good meal, such as porridge with peanut butter, margarine and sour milk or an egg and homemade bread. If they are given food which is left over from the previous day it must be heated up until the middle of the food is boiling hot. If there is not enough time to cook a morning meal the children should be given fruit such as mangos, guavas or bananas, a jar of groundnuts or cold food such as cassava, pumpkin, squash or sweet potatoes.

Activity

Aim:
to give participants practice in preparing morning meals.

Materials needed: cooking utensils, ingredients and a heat source for cooking.

Time needed: at least one hour

Sorghum or maize meal porridge and sour milk

Ingredients

1 cup of sorghum or maize meal
water
sour milk

Method

Cook porridge to a soft constituency. Add sour milk for extra flavour, protein, vitamins and minerals.

Sour mealie meal porridge

Ingredients

1 cup maize meal
water

Method

Mix maize flour with water. Leave to ferment overnight. Cook into a porridge the next morning for a healthy, tasty start to the day.

recipes for morning meals

The midday meal

If children are going to be away from home at lunchtime then they must take a healthy snack to school or work, rather than money to spend on sweets or drinks.

Healthy snacks for busy people at work and school

Many children and some adults suffer from a poor diet because they are away from home during important meal times. Buns, fizzy drinks or "freezits" become meals for many peoples at work or school.

The evening meal

In the evening children need a healthy evening meal containing carbohydrate–rich food (such as porridge or rice), protein–rich food (such as beans, soya mince, fish or meat) and different vegetables (such as tomatoes, onions, green leafy vegetables and pumpkin), preferably cooked with peanut butter.

Activity

Aim:

to give participants practice in preparing snacks.

Materials: cooking utensils, ingredients and heat source for cooking.

Time needed: at least one hour

African soda bread – *chimodho*

Ingredients

wholegrain flour
¼ cup of maize meal
a teaspoonful baking soda
a pinch of salt and sugar (optional)
egg (optional)
a little milk (optional)
water

Method

Mix all the ingredients in a bowl, adding enough water or milk to make a soft, sticky constituency. Leave the mixture to ferment for 20–30 minutes. Cook in a covered pan on a fire or bake in an oven of 25–30 minutes. Serve with herb tea.

recipes for snacks, breads and biscuits

Peanut biscuits

Ingredients

4 cups wholemeal flour
1 cup crushed groundnuts
2 level teaspoons baking powder or one teaspoon of baking soda
½ cup of margarine
3 eggs
½ cup of sugar

Method

Cream the margarine and sugar until light and fluffy. Add one egg at a time, beating well. Combine the flour, groundnuts, salt and baking powder or baking soda in a bowl. Add the flour mixture to the margarine mixture. Kneed the dough with clean hands. Roll out the dough onto a clean, floured surface and roll it to a thickness of 0.5 cm. Cut into rounds using a cup. Cook the biscuits on hot charcoal in a greased frying pan with a tight-fitting lid. Put some charcoal on the lid. Serve with tea or *mahewu*.

Source: A Zimbabwe Cookbook: Recipes for local foods: Care International in Zimbabwe

Activity cont'd

Sweet potato powder

Ingredients: 4–6 medium sweet potatoes

Method

Boil the water and add a pinch of salt. Wash the sweet potatoes and cut out any rotten parts. Cover the sweet potatoes in a pot of boiling water for one minute. Drain the water and allow the sweet potatoes to cool. Peel the sweet potatoes and cut into 1 cm thick rings. Dry in a solar dryer or in the sun until completely dry. Roast the potato rings in a pan over a medium heat until light brown on both sides. Set aside to cool. Pound in a clean mortar to a fine powder. Sift, using a sieve. Store in a clean, dry container. Use the powder to thicken relishes or stews, add to porridge or make into biscuits.

Sweet potato biscuits

Ingredients

3 cups wholegrain flour
1 cup sweet potato powder
2 level teaspoons baking powder or one teaspoon baking soda
½ cup margarine
3 eggs
honey or sugar
a pinch of salt
sunflower seeds or crushed groundnuts

Method

Cream the margarine and sugar until light and fluffy. Add an egg at a time, beating well between each addition. Combine the flour, sweet potato powder, salt and baking powder or baking soda in a bowl.

Add the flour mixture to the margarine mixture. Kneed the dough with clean hands. Role out the dough onto a clean, floured surface and roll to a thickness of 0.5 cm. Cut into rounds using a cup. Decorate with shelled sunflower seeds or crushed ground-nuts. Cook the biscuits on hot charcoal in a greased frying pan with a tight-fitting lid. Put some charcoal on the lid. Serve with tea or mahewu.

recipes for snacks, breads and biscuits

Maize biscuits with peanut butter, (*makeve*)

Ingredients

2 cups maize meal
2 tablespoons peanut butter
1 level tablespoon sugar

Method

Mix the meal, sugar and salt. Add enough water to make a dough of fairly medium consistency. Add the peanut butter and mix well. Bake over charcoal, as in the previous recipe.

Source: A Zimbabwe Cookbook: Recipes for local foods: Care International in Zimbabwe

Roasted groundnuts (*mutetenerwa*)

Ingredients

1 cup groundnuts (dry)

Method

Roast the groundnuts and add a little water and salt. Shake them until dry. Serve with sadza or as a snack. Alternatively roast pumpkin seeds or sunflower seeds.

Popcorn (*maputi*)

½ cup whole maize kernels, cut off the cob and dried.

Roast the maize dry (without oil) in a covered pan over a hot fire.

Some healthy snacks:
sweet potatoes, cassava,yam, pumpkin or squash (*mapudzi*), popcorn (*maputi*), roasted maize, *mutakura*, fresh fruit, caterpillars, *mahewu*, homemade bread, sweet-potato biscuits

Activity

nutrition campaign for children

Aim:

to help participants to think of ways to improve nutrition for school-aged children in their community.

Materials needed: pens and paper

Time needed: 30 minutes to 1 hour

Questions:

- Which children in your community are at risk of malnutrition?
- How can these children be helped?
- Which community institutions can be targeted? (Households, schools, churches, clinics, orphanages?)

Divide into groups. Get each group to think about a different community institution. Ask them to list activities that could be carried out to improve nutrition for children in the community.

During the report back, develop the activity list into an action plan for the community see page 46 for more information on community plans.

Session 4:
special food for women

Pregnant and breastfeeding women are at risk from malnutrition because their body needs increase during pregnancy and lactation. An unhealthy diet will not only threaten the health of these women but also puts their babies at risk. Pregnant women need more protein–rich food and more protective food, especially vitamin A and iron, than men. Teenage girls who become pregnant need special rich, balanced diets, because they themselves are still growing and can become malnourished.

Pregnant women and those who have recently given birth are at risk from anaemia (iron deficiency). Pregnant women should eat foods which are rich in iron such as liver, meat, fish and legumes, especially cow peas and roundnuts. Vitamin C is needed to absorb the iron, so fruit and dark green vegetables should also be eaten. Health facilities give iron supplements to pregnant women during antenatal care.

Pregnant and breastfeeding mothers are also at risk from vitamin A deficiency. These women should eat a wide range of dark green, leafy vegetables and yellow and orange fruit and vegetables. They should take foods containing fat or oil to help the body absorb vitamin A. Health facilities should give lactating women vitamin A capsules within six weeks after delivery.

Activity

designing menus for different groups

Aim:
to help participants to advise families how to plan healthy meals for several days at a time.

Materials needed: pens and paper

Time needed: 45 minutes

Divide into groups. Give each group a different problem, such as, designing a week's menu for:

- A family of seven with a grandfather, a mother, an 18-year-old girl with a new baby, a 12-year old boy, a five-year-old boy and a three-year-old.
- Children at a rural secondary boarding school.
- A child-headed family living in an urban area.
- A grandparent-headed household living in a rural area.

A grandparent headed household

Discussion

why are women at risk

Why are women more likely than men to signs of malnutrition. In groups discuss this issue for 15 minutes and then report back to the main group. What can communities do to make sure that women get enough healthy food to eat?

Session 5:
special meals for people who are sick

Good nutrition is a foundation for health. It does not replace medical treatment. Many illnesses such as TB and HIV/AIDS require professional care.

Most of the information in this session is adapted from: *fao, 2002, safaids, 2004, Ministry of Health and Child Welfare, 2005 and The Body (n.d.).*

Warning

If a person is sick and experiencing more than one symptom, the information given below in one section may contradict that given in another. For example, if they are losing weight we recommend adding fatty foods to their meals to help them gain weight. If they are suffering from diarrhoea as well, however, fatty foods can make it worse. In such cases it is important to read all the information in the relevant sections and avoid eating foods which either section tells you might be harmful.

How illness affects nutrition and how poor nutrition affects illness

People who are malnourished get sick more easily. This is because their bodies are weak because they are not getting enough energy. Their immune systems are weak because they are not getting enough protective food. Their bodies cannot repair the damage caused by infection because they are not getting enough body-building food. If families keep eating healthy, balanced diets their bodies can fight illness and recover quickly afterwards.

Many illnesses, such as TB, diarrhoea, measles and HIV/AIDS, reduce the body's ability to absorb food, so even if people are eating normally, their bodies do not get enough food. This can lead to "wasting", where the body stops putting on weight and the sufferer becomes very thin and weak.

Many illnesses, including those mentioned above, change the way the body functions, making it need more nutrients. Sick people must have a healthy, balanced diet with carbohydrate, fat, protein, vitamins and minerals. They should drink plenty of liquids each day.

Sickness in babies and children

Babies who are breastfed for over a year and children who have balanced diets grow strong and healthy, get sick less often and recover quickly when they do get sick. Healthy, well-nourished mothers will have more healthy babies.

Session 6:
digestive problems

Loss of appetite

Many sick people do not want to eat because they may feel nauseous, they may have a sore stomach from diarrhoea, they may have sores in their mouth, they may feel weak or depressed or they may be taking medicine which reduces the appetite.

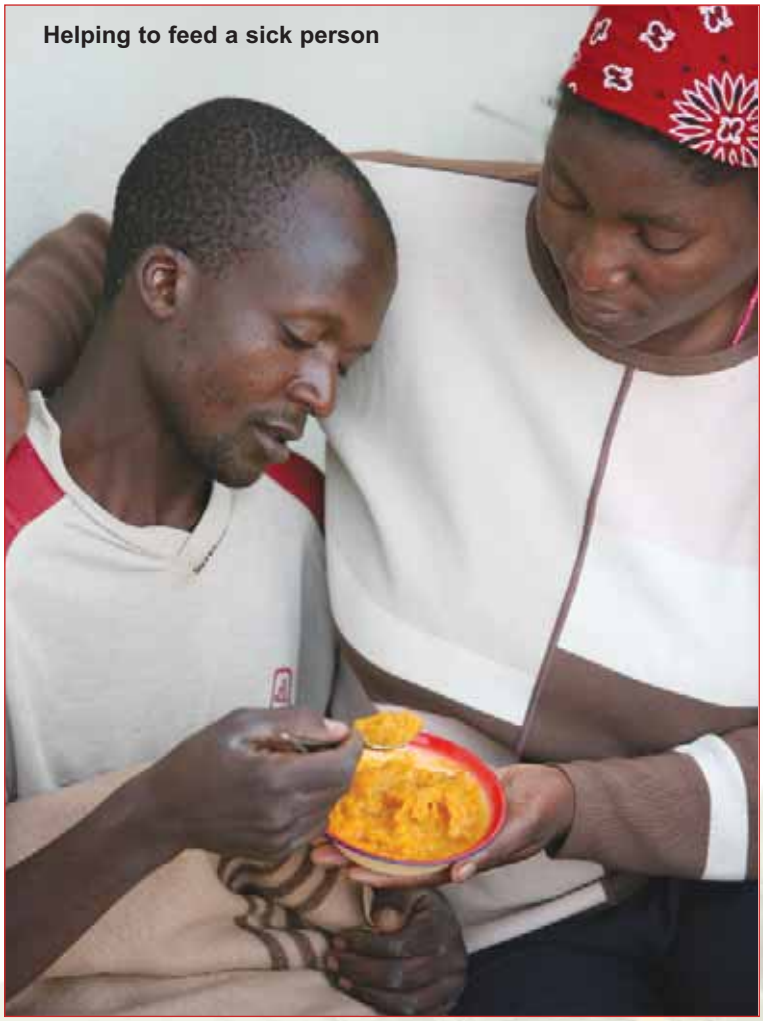
Families or carers can help people suffering from loss of appetite by:

- sitting with the sick person when they are eating, so that they still feel part of the family.

Home-based care volunteers helping a sick person

- helping them to sit upright in bed when eating.
- preparing their food for them.
- offering them their favourite foods and new things to eat with different flavours, such as spices like ginger and garlic and sour fruit like *masau*, tomato, orange and pineapple.
- giving them small, light meals and snacks throughout the day.
- making sure they get lots of fluids between meals but not during or just before meals.
- making them herb teas such as basil tea and mint tea, which stimulate the appetite.
- avoiding giving them fizzy drinks, cabbage, beans, beer and junk food.
- discouraging them from smoking
- encouraging them to brush their teeth after a meal.
- helping them to get light exercise and fresh air.

See appendix five on page 96 for more tips.



Helping to feed a sick person

making herbal teas to stimulate the appetite

Activity

Aim:

to give participants practice in preparing herbal teas.

Materials:

teapot or pot, boiling water, mint, basil or ginger

Time:

10 minutes

Steep (soak) leaves of basil or mint or crushed ginger in boiling water for 5–10 minutes, then drink the liquid.

Diarrhoea and vomiting

Diarrhoea is a very dangerous condition for babies and children. The most important treatment is to give the child as many drinks and liquid-based foods as possible to prevent dehydration (which means not enough liquid in the body). See appendix five on page 95 for more tips.

Signs of dehydration:

- great thirst
- less urine, which is dark in colour
- dry mouth
- sunken eyes
- a sunken fontanel (the soft spot on the top of a baby's head)
- when the skin is pinched it goes back slowly
- when a child is unhappy, weak and sleepy
- when a child is breathing fast

Families or carers can help people suffering from diarrhoea and vomiting by

- Giving them oral rehydration solution made from half a teaspoon of salt and 6 teaspoons sugar mixed in 750 ml water. Give babies under two years ¼–½ a cup every time they pass a loose stool. Give older children with loose stools ½–1 cup.
- Recommending that mothers whose babies have diarrhoea or are vomiting continue breastfeeding as much as possible.
- Make sure sufferers do not skip meals even if they don't feel like eating.
- Give sufferers food that is high in potassium such as avodado, groundnuts, bananas, potatoes, fish and meat.
- Reducing fat by using less cooking oil or removing fat from meat (peanut butter and avocado are healthy fats).
- Avoid spicy, salty or sour foods.

When someone has diarrhoea they lose large quantities of zinc. Zinc decreases the length and severity of diarrhoea. Zinc is important for the immune system and helps reduce the recurrence of diarrhoea during the following 2-3 months after treatment. Zinc improves appetite and growth. Children under 6 months should receive 10 mg per day for 10-14 days. Children over 6 months should receive 20mg per day for 10-14 days.

Foods which are high in zinc include meat especially liver, chicken, fish, milk, egg yolks, garlic, leafy green vegetables, nuts, pumpkin seeds, wholegrain cereals especially sorghum and millet and legumes (such as cowpeas, groundnuts, roundnuts, pigeon peas, sugar beans, green beans) and breastmilk.

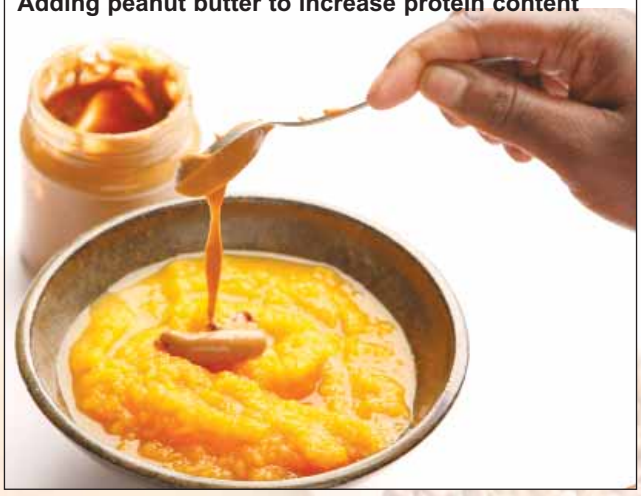
Source: *WHO, UNICEF joint statement 2004.*

The sufferer must also eat food such as

- soups made from mashed vegetables in water
- fruit juice mixed with water
- watery porridge
- soft mashed foods such as fruit mash, sweet potatoe and pumpkin mash.
- refined foods – white bread, white maize meal, white rice.

If the baby or child's condition does not improve quickly they must be taken to hospital as soon as possible.

Adding peanut butter to increase protein content



Activity

Aim:

to help participants prepare recipes that help people suffering from diarrhoea.

Ingredients:

Vegetables, including pumpkin, sweet potatoes, cooked mashed beans, porridge, peanut butter, salt.

Time taken:

30 minutes

Peanut butter relish (*gwatakwata*)

Ingredients

water

6 tablespoons peanut butter

pinch of salt

Method

Mix the water with peanut butter and boil until cooked. Add salt and serve with sadza and stew or vegetables.

preparing food foor people with diarrhoea

Baobab fruit porridge

Ingredients

Baobab fruit

Water

Method

Break the fruit. Sieve the powder from the seeds and threads. Mix the powder with water and boil for 20 minutes.

Add sugar to taste.

Mango fool

Ingredients

2 mangoes peeled and sliced

500 ml sour milk

Method

Mash the mangoes through a sieve. Mix the mashed fruit with sour milk.

Mulberry fool

As for mango fool above, but substitute mulberries.

Discussion

importance of hygiene

During food preparation, talk about the importance of hygiene when handling and preparing food. Get different groups to make different dishes.

Nausea and vomiting

This condition can also lead to dehydration and appetite loss.

Families or carers can help by

- helping the sufferer person to sit up while eating and for one to two hours afterwards. If they cannot sit up, make sure their head is propped up at least 10 cm higher than their feet.
- making sure the sufferer does not skip meals.
- giving them plenty of fluids to drink after, but not during, meals.
- preparing food for the sick person.
- helping the sick person to drink small amounts of water, soups and herb or spice tea, especially mint or ginger.
- giving them small amounts of food often, every two to three hours.
- giving them soft foods.
- giving them fresh orange or lemon peel to sniff.
- giving them dry salty foods and snacks.
- avoiding fatty greasy, sweet foods. Find out what makes them feel sick and do not give it to them.

See appendix five page 96 for more tips.

Constipation, bloating and gas

Some medicines, such as antibiotics and painkillers, can cause digestive problems.

Families or carers can help by

- getting the sick person to eat slowly and chew each piece of food several times before swallowing.
- adding chopped pawpaw to meat dishes.
- giving them fermented food such as sour milk, *mahewu* and yogurt, plus plenty of fresh vegetables, raw fruit and salads.
- avoiding cabbage, onions and beans and refined foods.
- getting them to eat plenty of fibre.
- encouraging them to exercise after eating to help their digestion.

See appendix five page 96 for more tips.

Session 7:

Coughs, colds and 'flu

Families and carers can help by:

- giving them plenty of water and other liquids to drink.
- preparing herbal teas with ginger, thyme, garlic, lemon and honey or guava or *zumbani* leaves.
- making them an inhalation (see below for instructions on how to do this).
- making them a homemade cough syrup.

See appendix five page 98 for more tips.

Activity

homemade remedies

Aim: to help participants prepare remedies for people suffering from colds and 'flu.

Ingredients

Lemon, guava leaves, eucalyptus, lavender, rosemary or thyme

Time needed:

30 minutes

Inhalation

Place leaves such as eucalyptus (gum tree) leaves, lavender, rosemary or thyme into a bowl of boiling water and ask the sick person to hold their face over the bowl. Put a towel or cloth over their head to enclose the steam and get them to breathe in the hot steam. This helps to clear the head, nose, chest and throat.

Cough syrup

Crush a lemon and mix the juice with honey. Take large spoonfuls as necessary to sooth the throat. Do not use honey if you have thrush.

Guava leaf tea

Steep (soak) leaves in boiling water. Drink the tea when it is cool.

Fever

Recommendations for people who are sick:

- Drink plenty of fluids.
- Have a warm bath or ask your carer to wash you, using a cloth.
- Try herbal remedies such as a lavender or thyme inhalation.

See appendix five page 97 for more tips.

Session 8:

HIV and AIDS

People living with HIV and AIDS should make sure they have a good source of the following minerals; selenium, zinc, calcium, magnesium, iron and iodine, and vitamin; A, B, C, E, and folic acid. These micronutrients help to boost the immune system.

According to a summary report organised by the World Health Organisation (WHO) in 2003, "The HIV/AIDS epidemic has had a devastating impact on health, nutrition, food security and overall socioeconomic development in countries that have been highly affected by the disease". It is clear that poor nutrition can worsen the effects of diseases and reduce the ability of the body to fight disease. Doctors and scientists are finding that an improved diet "can enhance the health and prolong the life of HIV-infected adults and children."

The report recommends promoting good nutrition as "a fundamental component of HIV prevention, care and treatment of people living with HIV/AIDS (WHO, 2003).

The WHO consultation on nutrition and HIV/AIDS in Africa in 2005 concluded that HIV infected adults and children who are not experiencing symptoms need to increase their energy intake by 10 per cent. Adults suffering from more advanced symptoms of the disease need to increase their energy intake by 20–30 per cent. HIV-infected

children experiencing weight loss need to increase their energy intake by 50–100 per cent.

People infected with HIV/AIDS do not need to increase their protein intake but should improve their intake of vitamins and minerals by eating a wide range of fresh fruit and vegetables.

Good nutrition of HIV-positive mothers during pregnancy and breastfeeding increases their weight gain and helps improve their pregnancy and birth outcomes (WHO, 2005).

Special needs for HIV positive people

People living with HIV and AIDS who are sick may not get enough food because

- some medicines they take reduce their appetite
- some of their infections may cause a sore mouth, nausea and vomiting
- some of their illnesses may cause abdominal pain
- some of the symptoms of illness reduce their absorption of food.
- they may experience tiredness, loneliness and depression, which may reduce their appetite
- they cannot afford to buy food, seeds or agricultural inputs to grow food
- they may not have the energy to grow their own food

HIV-positive people can to stay strong by making sure that they have a balanced diet. HIV-positive people who are not ill should follow a normal healthy, balanced diet with three good meals a day (FAO, 2002).

Having a healthy diet can help people with symptoms of AIDS to feel better. It may also slow down the illness. However, it is important to explain to participants that no food has been proved to cure HIV or AIDS.

For management of complications of HIV and AIDS, see the section above

People who are losing weight

People losing weight can try the following:

- Eat more energy-giving foods, such as maize, millet, sweet potatoes, rice, bread and pulses, meat and dairy products.
- Eat more protein-rich food, such as beans, cow peas, groundnuts, meat, fish, eggs, insects.
- Add powdered milk or peanut butter to porridge, sauces and mashed potatoes.

Butternut Soup

- Use herbal teas to improve the appetite.
- Eat even when you are not hungry.
- Eat soya products, peanut products, sunflower and pumpkin seeds and fruit, especially bananas and avocados.
- Eat bigger meals and have nutritious snacks between meals, including *maputi*, nuts, boiled eggs, peanut butter snacks, fruit, sweet potatoes, yam and cassava.
- Slowly increase the fat content of foods, unless diarrhoea occurs.

Please note: eating sugar can worsen thrush. Avoid sugary foods, fizzy drinks jam or honey.

Activity

Aim:

to help participants prepare recipes that help people who are wasting.

Ingredients:

Vegetables, including: pumpkin, maize meal, sweet potatoes, cooked mashed beans; margarine, cooking oil, porridge, peanut butter, pinch of salt.

Time needed:

one hour

Cassava precautions

There are two types of cassava, sweet and bitter cassava. Bitter cassava must not be eaten raw as it contains a poison. Sweet cassava contains poison in the skin only and may be eaten raw after peeling. The flesh of sweet cassava is softer and whiter than that of bitter cassava. Bitter cassava may be eaten only after it has been washed, peeled and then boiled (for 30 to 45 mins), roasted or fermented. Never eat stale or old cassava tubers: they are poisonous. To prepare cassava, harvest the fresh tubers and peel them. To preserve cassava, parboil, slice and dry fresh tubers in the sun.


Cow peas

high energy dishes for people who are losing weight

Cassava and cow pea stew

Ingredients

1 cup cow peas

water

1 sweet cassava tuber, peeled, washed and cut into cubes

1 onion, ground

vegetable oil

Method

Wash and boil cow peas. Boil cassava and mix with boiled cow peas. Season with onion, salt and oil.

General purpose soup powder

Ingredients

2 cups roundnuts

1 cup dried maize grains

½ cup onions, chopped

2 cups ripe tomatoes, chopped

pinch of salt

1 level tablespoon ground paprika

Method

Boil the roundnuts until almost tender, then drain. Boil maize until almost tender and then drain. Mix the onions and tomatoes in a bowl and season with salt and paprika. Pound the roundnuts and maize. Combine with the tomato mixture. Dry the mixture in a solar dryer or in the shade until completely dry, Lightly roast the mixture in a mortar to a fine powder. Sieve. Store in a clean, dry container. To prepare, add a heaped tablespoon of the soup powder to half a cup of cold water. Mix well and add to relish or stews. Simmer for five minutes.

Activity

managing complications of HIV and AIDS

Aim:

to help participants identify ways to advise those caring for a person living with HIV and AIDS.

Resources needed:

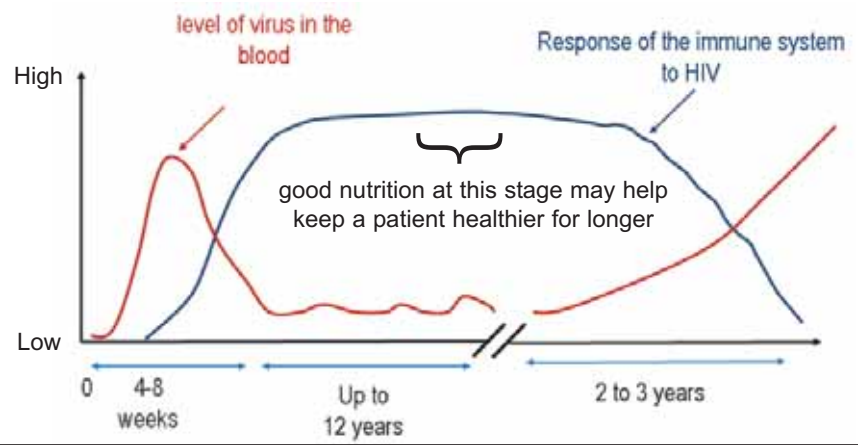
pens and paper

Time needed:

30 minutes

In groups, brainstorm what symptoms are likely to be experienced by a person living with HIV and AIDS. Using the information above, discuss how carers can improve the diet of people who are HIV positive but not experiencing any symptoms of AIDS. How could they care for someone who is experiencing symptoms of AIDS?

Stage in the HIV life cycle when good nutrition is very important



Tuberculosis (TB)

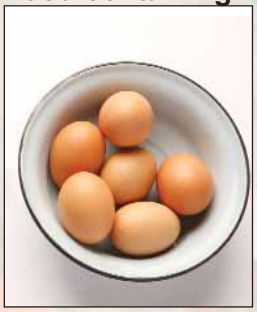
HIV-positive people have a high risk of contracting TB. A TB infection can make a person sick and lose weight. The TB drugs can have side effects. Good nutrition can help to reduce weight loss, boost the immune system and reduce the side effects of drugs.

Take your full course of TB treatment (6–8 months). Do not stop taking the medicine, even if you are feeling better.

Take the TB drugs half an hour after eating a proper meal, such as sadza and relish.

This helps prevent vomiting.

Food containing Vitamin B6





Eat plenty of fermented foods, such as sour milk, *mahewu* or unsweetened yogurt, with every meal. This will help counteract the side-effects of the antibiotics.

Avoid alcohol, which can make the burning feeling of the skin worse.

Eat food rich in vitamin B6, such as wholewheat bread, bananas, beans, peas, potatoes, avocados, mangoes and liver.

Cut an onion and leave it by your bedside when you sleep. This helps relieve the cough (see also tips under "Coughs, colds and 'flu" above).

Use garlic (unless your are taking anti-retrovirals) and ginger in your food. Drink homemade ginger tea.

Make a hot compress with ginger. Boil a tablespoon of chopped ginger in 2 of water. Soak a towel in the hot liquid. Squeeze out the towel. When it is cool enough not to burn you, lie down for 30 minutes with the towel on your chest. Dip the towel in the hot liquid whenever it cools down. Do this twice a day.

Session 9:
irritating infections

See appendix five for more tips.

Skin problems

Recommendations for care-givers:

Encourage the sufferers to

- eat food rich in vitamin A and B, such as garlic, liver, egg yolk, orange and green vegetables and fruit, millet, seeds, nuts, beans and wholegrains, including wheat, rice, sorghum.
- eat oats porridge to suppress herpes zoster.
- apply bulbanella to the skin to sooth symptoms.

People with a sore throat and mouth

Recommendations for care-givers:

- Give sufferers soft mashed foods such as porridge, mashed fruit such as mango, guava, pawpaw or avocado, and mashed vegetable dishes such as pumpkin with sweet potato mash.
- Mix sour milk or peanut butter in their food for added protein.
- Make healthy soups for them, such as butternut soup.
- Moisten the food to help it slide down more easily.
- Help them to drink with a straw.
- Try tilting their head backwards or forwards to make swallowing easier.
- Give them sour milk or yoghurt to eat.
- Give them small pieces of green mango or pawpaw to chew to relieve pain.
- Make herbal teas for them, such as thyme and garlic tea.
- Use bicarbonate of soda mixed with water as a mouthwash instead of cleaning their teeth.
- Avoid food or drinks that are too hot or cold, sour, salty or spicy, very dry, hard to chew or sticky or containing sugar or honey.
- Rinse their mouth with thyme tea to give a fresher taste.

Session 10:
herbs

In this section the word herb describes any useful plant, which can be used to treat symptoms of common illnesses. People all over the world have used herbs for thousands of years for cooking, medicine or to make cosmetics such as soap, shampoo and perfume.

Most edible herbs and spices contain important vitamins and minerals which help to keep our bodies strong and healthy. Many edible herbs and spices can be used to help to stimulate the appetite and soothe sores on the skin, in mouths and throats. Herbal remedies can be used to help ease symptoms of illnesses but they do not cure any illnesses (such as AIDS) or conditions (such as high blood pressure). Like any medicine they must be taken in the doses prescribed.

The principles of safe herb-use

- Good nutrition is the foundation for all health care. All medicines, including natural ones, can only work effectively if the patient is receiving a healthy balanced diet.
- The information given here should not be used as an alternative to professional diagnosis and treatment by a doctor or clinic.
- The plants listed in appendix five are safe for self-treatment at the recommended dosage, method of use and duration of treatment.
- Make sure that you correctly identify the plant that you want to use.
- When preparing herbal remedies always use clean water, clean plant material and practice good hygiene.

(See Appendix four and five for “Twenty herbs for home-use”)

Growing herbs

Many herbs can be grown easily from cuttings or other vegetative methods others take from seed. Most herbs need a warm sunny position with light well-drained soil. They should be pruned regularly to encourage bushing.

Harvesting herbs

- Ensure that you are picking the right plant, and the right part of the plant – for example, leaves or seeds. It can be sometimes be dangerous to use the wrong part of a plant.
- If harvesting in the wild, pick only where the plant is plentiful – this way you will pick healthier plant material
- Pick only plants that are healthy – do not pick plants with blight or insect damage; do not pick plants growing in a polluted area

Different parts of plants are often best picked when:

- Flowers are just opening
- Leaves are fully grown
- Plants are mature
- Seeds are fully formed

Drying

- Plants are generally best harvested on a sunny, dry morning.
- Drying is usually best done in a shaded, well ventilated area.
- Racks within a drying frame are good, especially for leaves, flowers, roots and bark, but whole plants can be hung up to dry from a shaded line. Fresh plant material can also be chopped and laid out on paper to dry – do not use printed newspaper as the inks can be toxic. In warm dry weather, the plant material should be dry within 36 hours.
- Throw away poorly dried plant material, for example, where leaves are discoloured or show signs of fungal infection. It can be dangerous to use poorly dried plant material.

- Once dry, carefully chop or break up the herb material into small pieces suitable for storage in glass jars.
- Disguard the dried plants if not used after storage for three months.

Storage and labelling

- It is very important to store dried herb material properly or it will not keep well. Dried herb material is best stored in glass jars. Jars must be clean and dry, and wherever possible should be sterilised. Fill the jar close to the top with herb material and close lid firmly.
- For short term storage (a few months) dried herb material can be kept in clean brown paper bags, folded over and secured with a rubber band.
- It is essential to label the jar or bag clearly with the following information :
  - Name, and part, of plant
  - Date of harvesting
- Keep in a cool, dry, dark place, away from heat and direct sunlight.
- Keep out of reach of children and animals.

- Dried herb material which changes colour due to damp or fungal infection, or is found to have insect infestation must not be used. Such material should be burnt - great care should be taken to prevent insects from escaping.

Treatment of common conditions

Do NOT use herbs if you are

- pregnant or breastfeeding
- a child under the age of 5. (Children between 6-12 years of age should be given half the dose recommended in the text. Children over 12 years may have adult dosage).
- taking medicine prescribed by a medical practitioner including anti retroviral drugs unless advised to do so by a doctor, clinic or professional herbalist.

Warning

- You must seek advice from a doctor or clinic if the health condition is not responding to nutritional and herbal treatments including any symptoms such as headache, diarrhoea, chest pains and fever which do not clear up after 24 hours. In babies this should be after 12 hours.
- Do not apply herbal remedies in the eyes, ears nose or vaginally unless instructed to do so.

Activity

awareness of herbs campaign

Aim:

to help participants recognise the advantages and disadvantages of herbal remedies and help them to give the best advice to others in their community.

Resources needed:

pens and paper

Time needed:

30 minutes

Divide the participants into groups. Ask each group to develop a different awareness tool, such as a poster for a clinic, a leaflet for home-based care volunteers, a programme for a herb awareness day at a school or an outline for a talk to church groups about the use of herbs. Report back and discuss.

Medicinal plant preparation

Where possible, readers are advised to consult a manual that provides more detailed information on the following processes. As with all food and medicine preparation, standard hygiene measures need to be observed during the harvesting, drying and storage of medicinal plant material, as well as its preparation for use.

- select fresh, healthy, clean plant material
- wash your hands, preferably with soap and warm water, before handling the material
- clean all surfaces, cloths and utensils that you are going to use to prepare the material
- use only clean water to prepare the remedies
- protect the material you are preparing from flies and dust
- cover any wounds you may have with a bandage or a plaster

Preparation

While preparing the material avoid

- drinking, smoking and eating
- sneezing or coughing on the material
- scratching your skin

1 teaspoonful = 2.5g

1 dessertspoonful = 10g

Teas/Infusions

- Keep to the recommended dosage.
- Fresh and dried herb material such as leaves, small stems and flowers can be prepared as a tea in the following manner:
- Place the recommended amount of fresh or dried herb material in a clean cup, teapot or pot
- Pour on 1 cupful (or more if required) of boiling water, stir and leave to stand for 10 minutes (if possible with a lid on top of the container)
- After 10 minutes, strain into a cup
- Allow to cool until comfortable to drink

Simmering/decoctions

- Keep to the recommended dosage.
- Fresh and dried bark, woody stems and roots - tough plant parts - are
- best prepared by simmering in the following manner:
- Place the recommended amount of fresh or dried herb material in a clean pot
- Pour on 11/2 cups of cold water, stir and bring to the boil.
- Once the liquid is boiling, reduce the heat and simmer gently for 15 minutes
- Allow to cool, strain into a cup and drink

(See Appendix four for “Safe plants for home health care”)

For detailed information on safe plants for home health care see appendices four and five

module FOUR

harvesting, preparing & preserving food

OBJECTIVES

By the end of this training module participants should be able to

- explain the precautions needed when handling and preparing food;
- demonstrate ways to prepare and cook food so as to preserve as many nutrients as possible;
- demonstrate practical ways to process and preserve food.

Session 1:
food hygiene

When preparing food for the family and particularly for children and sick people remember the following important rules:

wash you hands, preferably with soap and warm water, before handling food;

- make sure all surfaces, cloths and utensils (knives, boards, cloths, plates, bowls, pots and spoons) are clean,
- make sure your ingredients are clean and the fruit and vegetables have been washed in clean water,
- use only clean water to cook with,
- protect the food you are preparing from flies and dust.

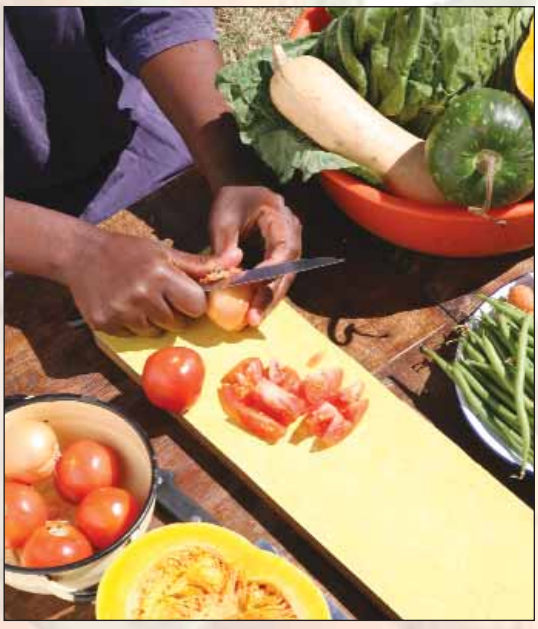
Avoid

- drinking, smoking and eating while cooking
- sneezing or coughing on food
- contaminating the food with a wound – cover wounds with a plaster
- scratching your skin when cooking

Session 2:
sourcing healthy ingredients

Advise participants to

- eat fresh food (as soon as it has been harvested)
- avoid buying old fruit or vegetables
- eat unprocessed or unrefined foods. Home-milling preserves vitamins, minerals and fibre better than factory mills do
- avoid buying food which may have been grown or washed in contaminated water or exposed to poisonous smoke on street corners sold by vendors
- grow their own food without using chemicals. This is healthier than food grown with pesticides and fertilisers
- remember that soft, dark green leaves are healthier than light green ones or tough leaves. Good greens to use are amaranth, blackjack, pumpkin leaves, cow pea leaves, sweet potato leaves and cassava leaves




Harvesting vegetables in the garden

Session 3:
healthy cooking practices

The way we cook our food is very important. If we follow simple, careful methods we can get the most from our food, on the other hand, if we overcook our food or use baking soda we will destroy most of the goodness in the food. Easily available, delicious traditional ingredients can be made simply into tasty healthy food.

When cooking, try to avoid

- undercooking, especially meat, eggs and beans
- overcooking, especially vegetables
- adding too much salt or sugar
- leaving food to get cold before eating it
- reheating food that has been cooked before

Cabbage caution

Cabbages do not contain as many vitamins and minerals as other green vegetables. They require a lot of fertilisers and pesticides to grow and they take up a lot of space in gardens. Cabbage leaves should not be picked until the vegetable is mature, when the whole plant is harvested.

Vitamins and minerals are damaged

- by being left in the sun or heat, air or water
- by being mixed with baking powder
- when food is cut up into small pieces
- when food is reheated or left standing after cooking
- when people drink tea with food – this makes it hard for the body to take in iron.

Vegetables

Eating some raw fruit and vegetables means that you get more vitamins and minerals and you save fuel. Raw vegetables such as carrots, cucumber and tomatoes make good snacks that can be given to children, pregnant mothers, hungry teenagers or people who are losing weight.

Raw vegetables can be served as salads with meals. Raw fruit can be eaten after a meal or sliced and added to salads. Herbs such as parsley, mint, lemon grass, fennel and dill and sliced spices such as ginger and garlic may be added to salads.

Activity

This dish is rich in vitamins and minerals, especially vitamins A and C, iron and calcium.

Ingredients:

lettuce or blanched spinach (see page 83), chopped fine
carrots, sliced into thin pieces
tomato slices
prickled cucumber slices (prickles removed)
onion rings or garlic (if more flavour is desired)
crushed, roasted groundnuts and sunflower seeds
fresh herbs

a simple, healthy salad with easy to grow ingredients

For the dressing: 1 tablespoon of peanut butter, 2 tablespoons of cooking oil, 1 tablespoon of lemon juice, salt and pepper to taste. You can alter these proportions to taste.

Cooking greens

- When cooking leafy vegetables, tear the leaves into pieces rather than cutting them with a knife. This preserves their vitamin C content.
- Do not use bicarbonate of soda when cooking green vegetables, as this destroys vitamins. Use ash as a substitute if you want to.
- If you do cook vegetables, use a small amount of water to steam the food rather than boiling it. If you boil the food, add the drained water to stews and sauces. Try stir-frying vegetables for a few minutes in a little oil.
- The less time you cook vegetables, the more nutrients you will preserve.


Preparing greens

Vegetable	Boiling time (minutes)	Vegetable	Boiling time (minutes)
Cabbage (shredded)	3–10	Peas	12–16
Carrots:		Potatoes:	
(young, whole)	15–20	(whole, medium-sized)	25–40
(older, whole)	20–30	(quartered)	20–25
(sliced or diced)	10–20	(diced)	10–15
Covo/rape	10–15	Spinach	10–20
Green beans	12–16	Squash	8–15
Maize (green)	5–15	Sweet potatoes, whole	35–55
Okra	10–15	Tomatoes, cut-up	7–15
Onions	15–30		

Source: UNICEF, 2004; USDA, 1971

Activity

steamed spinach

Aim:

to demonstrate how to cook green leafy vegetables by steaming them

Materials needed:

spinach leaves, pot, clean water, source of heat for cooking, sieve or loose-weaved threshing basket, wooden spoon.

Time taken: 10 minutes

Tear the spinach leaves. Place them in the sieve or loose-weaved threshing basket. Place the sieve/basket over rapidly boiling water so that the steam cooks the leaves.

Stir the leaves with a wooden spoon so that they all become exposed to the steam. The spinach should be cooked in about five minutes.

Activity

leaving the skin on

Aim:

to show participants how to cook and eat unpeeled vegetables.

Materials:

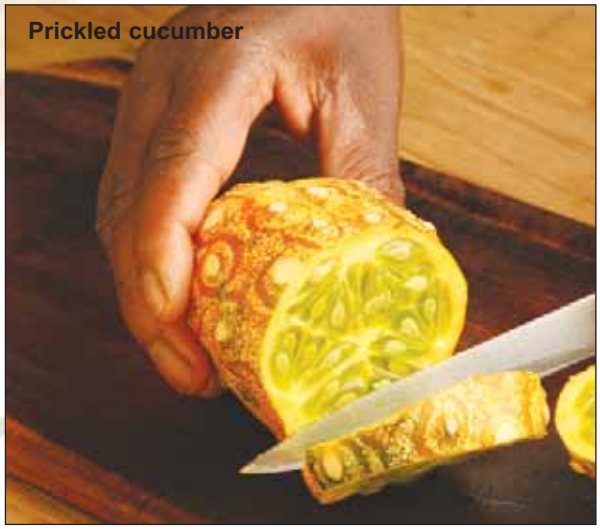
pot, water, damp cloth or scrubbing brush. Salt to taste; unpeeled pumpkin, squash, butternut, sweet potatoes and Irish potatoes.

Time taken: 15–20 minutes

Wipe the vegetables with the damp cloth or scrub with the scrubbing brush. Cook until tender. Then eat them.

Vegetable accompaniments

Here are some healthy vegetable dishes that can be eaten with main dishes.



Prickled cucumber

Prickly cucumber peel relish

Ingredients

6–10 prickled cucumbers
3 tablespoons cooking oil
1 medium onion, chopped
2 tablespoons peanut butter
2 ripe tomatoes, grated
1 heaped tablespoon soup powder.
pinch of salt

Method

Wash and peel the cucumbers. Remove the prickles from the peel then cut the peel into strips 0.5 cm wide. Boil the peel until tender. Drain the water into a cup and set the peel to cool. Cook the onion until browned. Add the tomatoes, cooked cucumber peel and salt to onion. Mix peanut butter and soup powder in half a cup of the reserved water used for cooking the cucumber peel. Add the peanut butter mixture to the cucumber, tomatoes and onion. Simmer for five minutes. Serve with sadza.

Okra (dedere)

Ingredients

500 g okra
A pinch of ash
3 tomatoes, chopped
pinch of salt

Method

Boil the water and add a pinch of salt. Cut up the okra into small rounds and add to the boiling water. Add the chopped tomatoes. Cook until soft. Serve with sadza and stew.

Green leaf vegetables with peanut butter

You can use any of the following leaves: amaranth leaves (*mowa*), blackjack, cassava leaves, *moringa* leaves, sweet potato leaves, spinach

Ingredients

2 bunches of leaves (any of the above), washed and pounded.

ash

water

4 tablespoons peanut butter

pinch of salt

Method

Add the leaves to a pan of boiling water and cook until soft. When cooked, add the peanut butter.

Fresh soft pumpkin leaves

Ingredients

3 bunches of pumpkin leaves

4 tablespoons of peanut butter

pinch of salt and ash

water

chopped tomatoes

Method

Boil the water, salt and ash.

Add the pumpkin leaves and tomatoes cook until soft.

Add peanut butter. Leave for a few minutes before serving with sadza.


blackjack leaves

Dried cow pea leaves (*mufushwa we nyemba*)

Ingredients

500 g dried cow pea leaves

2 tomatoes, chopped

water

pinch of salt

2 tablespoons vegetable oil or
4 tablespoons peanut butter

Method

Soak the vegetables for 15–20 minutes to soften them and remove any sand.

Wash the vegetables and boil until soft.

When cooked, mix with peanut butter or vegetable oil.

Serve with sadza

Cooking beans

Many different types of beans are grown and eaten in Zimbabwe. They include butter beans, Madagascar beans, sugar beans, cow peas, pigeon peas, soya beans, dried groundnuts, dried roundnuts.

Many people don't like to eat beans because

- they taste bland
- they cause gas and bloating
- they take a long time to cook
- they use a lot of fuel to cook

These problems can be solved by

- cooking beans with other vegetables, herbs and spices
- soaking beans overnight before cooking to reduce gas and cooking time
- skimming off the foam produced by the beans during cooking to prevent gas and bloating. This can be done with a spoon.
- using a hot box cooker to save fuel and the time you spend watching the food cook.

Activity

Aim:

to get participants to sample different nutritious bean dishes.

Materials needed:

cooking utensils, ingredients and a heat source to cook on.

Time needed: prepare the dishes beforehand, since they take a long time to cook.

Roasted crushed cow pea relish (*rupiza*)

Ingredients

1 cup cow peas
water
pinch of salt
4 tablespoons peanut butter

Method

Roast the cow peas. Leave to cool. Crush, using a pestle and mortar and remove the skin. Wash and boil until soft (use a low heat because it burns easily). Add salt and peanut butter and mix well. Simmer for 10–15 minutes. Serve with finger millet sadza or maize sadza.

cooking different types of beans

Mangai or *mutakura* (porridge of whole maize, groundnuts, roundnuts and cow peas)

Ingredients

4 dried whole kernel maize on the cob
½ cup groundnuts
½ cup roundnuts and ½ cup cow peas

Method

Remove the maize from the cob. Boil the maize and roundnuts for about 45 minutes. Then add groundnuts and cow peas and boil until soft. Serve as a porridge or with tea.

Cow pea relish (*nyemba*)

Ingredients

1 cup cow peas
pinch of salt
water
2 tablespoons vegetable oil
2 small onions, chopped
spices to taste

Method

Boil the cow peas until soft. Add spices, vegetable oil, tomatoes and onions, then salt. Serve with sadza or rice.

Soya bean handling and storage

Harvest soya beans when all the pods are rips and dry. Clean the beans thoroughly then store in a cool, dry place protected from insects. Soya beans can store for up to three years.

Processing

In order to destroy harmful, indigestible substances in soya beans they should be treated using the following method. Soak the beans in clean water. Boil the beans for 25-30 minutes in water containing half a teaspoon full of bicarbonate of soda. The beans should be de-hulled before eating. They may be eaten like other beans or dried and made into flour.

Activity

making a hot box

Use this method to prepare beans or rice.

Use a hot box to cook food that needs to boil for a long time, such as beans, rice, pumpkin or green maize. First soak the beans, rice or other dried food before cooking it, to reduce cooking time.

Place the pot in a cardboard box or basket. Cover the pot with insulating material and close the box. Leave it for a few hours, depending on what food you are cooking. The box will keep the pot hot and the food will continue to cook. After some hours the food will be cooked.

Put the food into a pot with a tight-fitting lid, add water and bring to the boil. When the food has been boiling for about 15 minutes, remove the pot from the heat and put it in a cardboard box filled with insulation material such as dried grass, newspaper or rags.

Session 4:
harvesting and storing food

Harvesting

To preserve the quality of the crop for marketing, retain the quality of nutrients and a long shelf life:

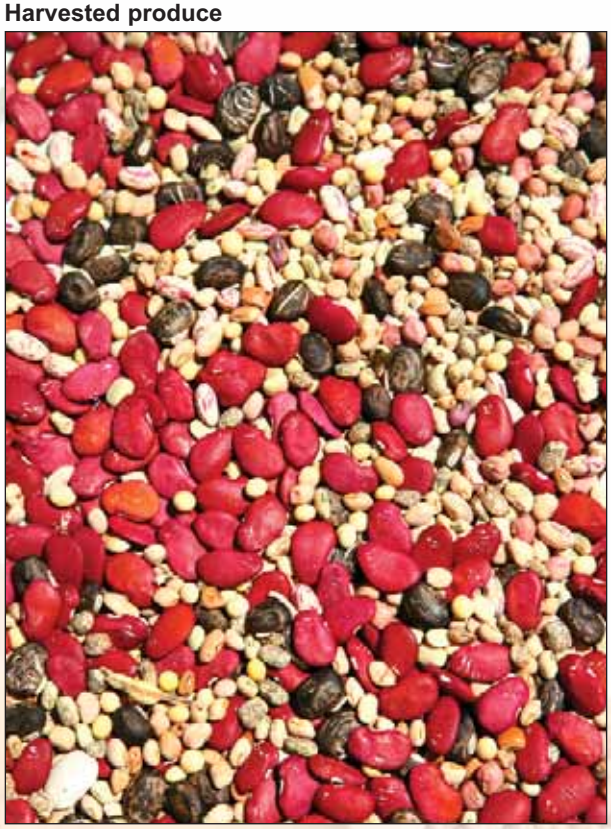
- Wash your hands before harvesting and wash produce in clean water.
- Harvest each type of fruit and vegetable at the correct stage of maturity.
- Harvest crops only when they are mature.
- Choose the coolest time of day to harvest fruit and fruit vegetables like tomatoes and peppers. Choose mid-morning for leafy vegetables, when the leaves contain less water.
- Handle the crop as little as possible. Be gentle to avoid bruises, cuts and spots, which can get infected.
- Place the harvested produce in the shade.
- Sort the crop according to the size, quality and maturity.

- Do not put ripe fruit with unripe fruit, as they will cause the whole harvest to ripen.
- Pick fruit such as tomatoes, apples and oranges with a small stem. This must not be too long as a long stem might prick the other fruit.

- Pack the sorted produce carefully into baskets, boxes or crates lined with soft material such as soft, dry grass, newspaper, banana leaves or dry sand.
- Avoid squashing the produce when packing it.
- Make sure you do not eat or sell vegetables that have been recently dosed with pesticides.

Source: UNICEF, 2004; ASEAN-PHTRC, 1981

Harvested produce



Harvesting and storage tips for different crops

Crop	Time to harvest	Harvesting tips	Storage tips
Avocado	May be picked when the fruit is the desired size and just starting to change colour	To increase time of ripening, wrap the fruit in newspaper	Store in baskets or on shelves
Bananas	When fruit have reached the desired size and are just starting to turn yellow	Cavendish varieties ripen more slowly that ladyfinger so are better for marketing	Hang in cool, dry, shady places. Remove hands as they ripen
Beans and peas	May be harvested green or dry. If they are harvested when they are green, the pods should be tender and the seeds soft to touch.	Cut pods with a small stem	Beans and grains may be stored in dry, airtight containers. Storing them with dried leaves of herbs such as mint, lavender, eucalyptus or chilli can help keep pests away, but may change the taste of the food. Dried beans may be coated in cooking oil to help prevent insects attacking them
Cabbage	Harvest when the head is mature	Cut the plant out with a sharp knife. Leave the roots in the soil. Keep one or two outer wrapping leaves on the produce	Store in a moist clay pot covered with a damp cloth
Carrots	Pull up when they are the desired size		After lifting the vegetables remove any excess earth from them. Twist off leaves leaving about 5 cm of stalk. Line a deep box with 2.5 cm of slightly damp, clean sand. Put in a single layer of the vegetable. Pack a layer of sand on top of this, followed by another layer of vegetables. Finish with a layer of sand
Cassava	Harvest 6–12 months after planting	Does not store well. Harvest as required	Can be dried or stored in a pile of soil or a pit
Citrus fruit	Harvest when the fruit is the correct size and just beginning to yellow	Leave a small stem on the fruit when you cut it	Store on shelves or in baskets
Cucumber and chouchou	Harvest when the vegetables are the desired size. They may be harvested when small for pickling or for eating raw	Leave a small stem on the fruit when you cut it	Store firm cucumbers on racks or stone layers
Garlic	When leaves turn yellow and bend over	Loosen the soil, then gently lever the bulbs out and leave them on the soil surface to dry	Same method as onions below
Leafy vegetables (e.g. amaranth, blackjack, rape, covo, *tsunga*, spinach, pumpkin leaves	Harvest as needed. Make small regular pickings so that the plant will not be damaged	If you pick pumpkin leaves before the plants have begun producing, you will get fewer pumpkins. It is best to use some plants for leaves and some for fruit. If you are growing broccoli or cauliflower, do not harvest the leaves otherwise the crop heads will not form.	Green vegetables and soft fruit do not store well, so they should be used fresh or dried

Harvesting and storage tips for different crops

Crop	Time to harvest	Harvesting tips	Storage tips
Onions	For dried-off onions, which can be stored, wait until the stems have died and are lying flat on the ground	You can encourage this by bending or knotting the leaves when the bulb has reached full size. Lift the onions slightly out of the soil. Leave them to dry on top of the soil for a couple of days before bringing them inside.	In wet weather spread the onions in a single layer and dry them under cover. They must be thoroughly dry before being stored in a dark place. Place them on slatted wood trays or string them up on ropes. Pull the roots off the onions and tie the necks around the rope. Plait the tops to make a continuous rope of onions, which can be hung up.
Potatoes	New potatoes can be harvested after two months from planting. For large, potatoes wait until the leaves have begun to turn yellow and die back.	Gently loosen the soil 30 cm from the plant. To avoid damage, use your hands to harvest the potatoes.	Store in a dark place. Large quantities of potatoes may be stored in pits. Smaller amounts may be put in boxes or trays lined with straw and topped with more straw or newspapers. They may also be stored in hessian or plastic sacks. Allow the roots to sweat for a few days before bagging them. Inspect them regularly for mice attack or rotting.
Pumpkins and squash	When the plant has died back and the fruit is ripe	Leave the fruit in the field for as long as possible to cure	Store in a well-ventilated place. Hang up in netting or string bags. If you are storing them on shelves, turn them every few days to prevent mould.
Sweet potatoes	Matures after 3 – 6 months	Does not store well. Harvest as required	Can be dried or stored in a pile of soil or a pit.
Yam	Matures when 8 – 10 months	Does not store well. Harvest as required	Can be dried or stored in a pile of soil or a pit
Tomatoes, peppers, chillies or eggplants	Select only mature fruit for picking. Do this regularly every 3–4 days. Pick tomatoes when they are slightly green for easier handling.	Leave a small stalk on the fruit when you harvest it	Hang in a cool, airy place or keep under a bed or in a cupboard in trays lined with newspaper.

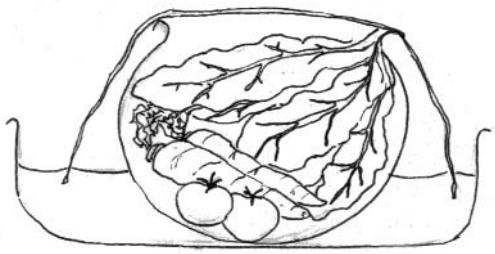
Source: adapted from IIRR, 1993.

Storage tips

- Only store produce that is in good condition. Do not store any produce that has skin damage. Do not store soft fruit or vegetables.
- Good storage methods protect produce from insects and diseases caused by damp conditions.
- Storage areas should be cool, moist and dark, well-ventilated and protected from insects and mice.
- Fresh produce should be washed in clean water and thoroughly dried before storing.
- Storing green beans and carrots can be improved by wrapping the produce in clean banana leaves or yam leaves. Singe the leaves slightly on a fire first to prevent them from cracking when they dry.

Activity

making a clay pot fridge



Aim:

to demonstrate to participants how they can keep vegetables fresh after harvesting, using a clay pot.

Materials needed:

clay pot, basin of water, cloth, fresh vegetables.

Time needed:

10 minutes.

Vegetables can be kept for up to one week in a damp clay pot that is placed in a basin of water or draped with a wet cloth.

Method:

Wet the pot and the cloth. Place the pot in the basin of water. Put the vegetables inside it and cover the pot with the wet cloth. Place one corner of the cloth in the basin of water, so that water is continuously sucked into the cloth as it dries out.

Storage pits

Root crops can be stored in dry pits, lined with grass or other dry materials for example sacking. The stored food can be covered in layers of ash, this helps repel pests.

Session 5:
preserving food

We preserve food in order to keep it for a long time after it has been harvested. Preserving stops the food from decaying. Effective preserving methods

- help food to last a long time so that families can use it when fresh produce is not available.
- preserve the nutrients of food.
- help make produce easier to package and transport for selling.

The cheapest, most effective and simplest methods for preserving food in southern Africa are blanching, fermenting, drying and curing.

Drying

Drying helps to preserve food by removing the water that helps bacteria and fungi to grow.

Most fruit, vegetables and root crops can be dried. Produce that is commonly dried includes bananas, mango, pawpaw, guava, okra, tomato, onion, pepper, pumpkin and squash, sweet potato, cassava and all green vegetables. Meat, including fish and insects, can also be dried. Mushrooms, pumpkin seeds, beans and grains can be dried.

When they are required for cooking add the dried vegetables directly to cooked dishes. Dried fruit can be a useful, long-lasting snack.

Tips

- Crops must be processed within 48 hours of harvesting.
- Avoid sun-drying. Drying in the shade reduces loss of nutrients.
- Wash, sort, peel and cut up the produce. Sort it into groups of similar ripeness and cut it into pieces of similar size so that they take the same amount of time to dry.
- Store the produce in well-ventilated places to avoid mouldy conditions.
- Keep dried or cured foods in clean, dry, dark, airtight containers.
- Bananas, sweet potatoes, cassava and pumpkins can be made into flour for storage.
- Green vegetables should be blanched before you dry them.

Blanching

Blanching is used to prepare some produce for drying. It helps vegetables keep their colour and flavour and to last for a longer time. This method can not be used for okra, onions, garlic or chilies.

Activity

blanching demonstration

Aim:

to demonstrate blanching

Materials:

a selection of green leafy vegetables, a pot with a little water, a source of heat, a sieve (if available), a knife.

Time taken:

5–10 minutes

Tear the green leaves into a suitable size or wash the vegetables, then cut them into 1 cm square pieces.

Method 1:

bring the water in the pot to boiling point and dip some of the vegetables into the boiling water for one minute. Explain to the participants that steaming is a better way to blanch as it preserves more nutrients.

Method 2:

place the remaining vegetables into the sieve. Steam them for 1–3 minutes, depending on how large the pieces are.

Drying structures

Drying food in the sun is not a good idea because the sun destroys many important nutrients. The simplest drying method is to construct an open-sided drying shed.

Examples of dried produce

Activity

drying different crops

Aim:

to give participants practical experience of drying a range of root crops, fruit and vegetables.

Resources needed:

a selection of fruit such as bananas, mango, guava, pawpaw, vegetables such as cow pea leaves, sweet potatoes leaves, amaranth, spinach, tomatoes, carrots, pumpkin, squash, *moringa*, and root crops such as yam, sweet potato and cassava.

Time needed:

10 minutes to set up the drying process, many days for the produce to dry (depending on the type of produce and the weather conditions).

Method:

Clean the produce. Slice it into pieces no larger than 1 cm thick. Blanch some of the produce for comparison. Place the produce on mats or trays in the shade or in a drying structure, such as the one illustrated. Turn the slices over each day. Most vegetables take a few days to dry. Pumpkin, okra and other moist produce can take over a week.

Herbs and spices may be dried by hanging them in a shady place or placing clean leaves between sheets of newspaper.

Solar driers

Simple solar driers can be made using wood, black plastic and clear plastic. Ask your local agricultural extension officer for a design.

In a solar drier the prepared food is placed on drying trays. The black plastic part of the drier is placed in the sun. As it heats up it pulls warm air through the drying trays. The drying trays are in the shade.

A solar drier

Curing

This method is mainly used for preserving root crops such as cassava, sweet potatoes and yam. Once cured, these crops can be pounded into flour which can be used to make porridge, biscuits and drinks.

Activity

curing root crops

Aim:

to give participants experience in curing produce.

Materials needed:

a selection of root crops. Make sure that the skins are not damaged.

Time needed: 4–7 days

This is best done in the dry season. Spread whole roots on a clean, dry surface in the shade. Leave them to cure. When the outer surface of the roots is hard they can be stored and used when required.

Source: FAO, 2001.

Helping to process dried vegetables

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Appendices

Nutritional values of different crops per 100g

Comparison of nutrient values of different legumes

Legume	Energy (kcal)	Protein (g)	Fat (g)	Iron (g)	B-carotene* (µg)	Vitamin C (mg)
Roundnuts	345	19.0	6.2	12.0	10	0
Beans	320	22.0	1.5	8.2	0	1
Cow peas	320	23.0	1.4	5.0	12	2
Groundnuts	570	23.0	45.0	3.8	8	1

* from Vitamin A

Comparison of nutrient values of different staples

Staple	Energy (kcal)	Protein (g)	Fat (g)	Iron (g)	B-carotene* (µg)	Vitamin C (mg)
Cassava roots	140	1.0	0.4	1.9	15	31
Maize	345	9.4	4.2	3.6	0	0
Maize flour (80%) extraction	335	8.0	1.0	1.1	0	0
Millet	340	10.0	4.0	21	25	3
Sorghum	345	11.0	3.2	11	20	0
Sweet potatoes (white)	110	1.6	0.2	2.0	35	37
Yam	94	1.8	0.1	1.2	0	8

* from Vitamin A

Comparison of nutrient values of different fruits

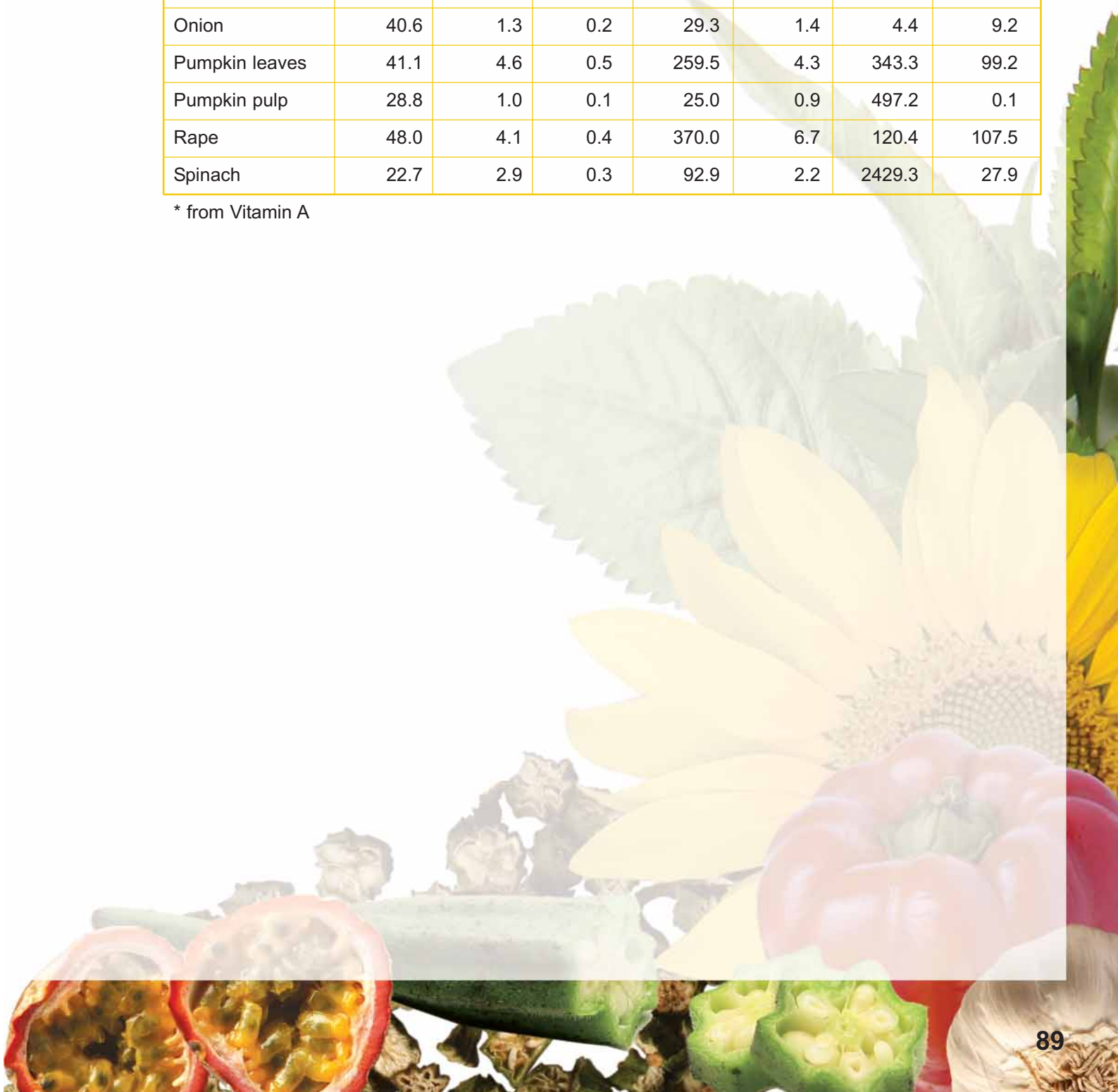
Fruit	Energy (kcal)	Protein (g)	Fat (g)	Calcium (g)	Iron (g)	B-carotene* (µg)	Vitamin C (mg)
Apple	56.2	0.4	0.6	6.5	0.6	13.39	5.4
Avocado	180.7	2.5	17.7	11.5	0.9	62.29	12.10
Banana	94.7	1.3	0.3	7.0	0.5	54.38	10.90
Baobab pulp	29.0	2.2	0.4	76.7	335.57.4	11.67	292.5
Granadilla	84.4	1.6	1.0	13.8	1.2	83.25	21.5
Guava	66.0	1.0	0.5	16.6	0.9	50.0	221.4
Mango	62.4	0.6	0.3	10.8	0.4	189.3	4.8
Mulberry	54.0	1.4	0.8	33.8	2.0	21.65	11.0
Pawpaw	37.0	0.6	0.1	20.5	0.4	4.91	3.9

* from Vitamin A

Comparison of nutrient values of different vegetables

Vegetable	Energy (kcal)	Protein (g)	Fat (g)	Calcium (g)	Iron (g)	B-carotene* (µg)	Vitamin C (mg)
Amaranth	41.4	3.6	0.8	393.9	3.2	617.5	76.5
Blackjack	36.8	3.4	0.7	154.8	6.1	69.0	61.0
Cabbage boiled	19.7	1.4	0.2	45.1	0.4	8.6	34.2
Cabbage raw	25.0	1.6	0.2	47.7	0.7	11.2	44.9
Carrot	28.3	0.8	0.2	34.0	0.5	2825.5	5.4
Okra	31.1	2.0	0.2	76.9	1.0	115.7	25.7
Onion	40.6	1.3	0.2	29.3	1.4	4.4	9.2
Pumpkin leaves	41.1	4.6	0.5	259.5	4.3	343.3	99.2
Pumpkin pulp	28.8	1.0	0.1	25.0	0.9	497.2	0.1
Rape	48.0	4.1	0.4	370.0	6.7	120.4	107.5
Spinach	22.7	2.9	0.3	92.9	2.2	2429.3	27.9

* from Vitamin A



Functions and sources of important vitamins and minerals

Vitamins	Function	Source
Vitamin A	Makes white blood cells. Essential for healthy vision, skin, mucous membranes, teeth and bones. Protects against infection, reduces mother-to-child transmission of HIV, reduces adult and infant mortality, improves child growth.	All yellow and orange fruit and vegetables, dark green leafy vegetables, liver, oily fish, dairy products and egg yolk
Vitamin B1, B2, B3	Helps your body use energy, improves appetite and nervous system. For healthy vision and skin. For nervous and digestive system.	Wholegrain cereals, beans, meat, poultry and fish, milk, lacto, meat, green leaves and wholegrain cereals, eggs
Vitamin B6	Helps your body use energy proteins and fats. Helps make red blood cells.	Sweet potatoes, white beans, maize, avocados, cabbage, wholegrain cereals, seeds, eggs, leafy green vegetables, bananas, legumes, meat and fish
Folic acid	Builds new cells, especially red blood cells and cells lining the digestive system.	Liver, red meat, green leafy vegetables, fish, legumes, groundnuts, oilseeds, wholegrain cereals, egg yolk and avocados
Vitamin B12	Helps your body build new cells and maintain nerve cells	Red meat, fish, poultry, seafood, sardines, cheese, eggs, milk, wholegrain cereals
Vitamin C	Helps body to use calcium and other nutrients to build bones and blood vessels. Increases iron absorption. Increases resistance to infection and acts as an antioxidant. Helps your body use proteins.	Citrus fruits (oranges and lemons), baobab, guava, cabbage, green leaves, tomatoes, sweet peppers, potatoes, yam
Vitamin E	Protects cells and increases resistance to disease	Leafy vegetables, vegetable oils, groundnuts, egg yolk, dark green vegetables, nuts and seeds, wholegrain cereals

Minerals	Function	Source
Calcium	Healthy teeth and bones, heart and muscle functions, blood clotting, blood pressure and immune defences	Milk, green leaves, kapenta, nuts, beans and peas
Iodine	Ensures the development and proper functioning of the brain and nervous system	Fish, seafood, milk, iodized salt
Iron	Transports oxygen to blood, replacement of new blood cells	Red meat, poultry, liver, fish, eggs, groundnuts, beans, some cereals, green leafy vegetables, seeds, wholegrain cereals, dried fruit
Selenium	Protects heart muscle	Seafood, liver, meat, carrots, onions, milk, garlic, mushrooms, wholegrain cereals
Zinc	Reinforces the immune system, healthy digestion, transports vitamin A	Meat, chicken, fish, cereals, leafy green vegetables, seafood, nuts, pumpkin seeds, milk, liver, wholegrain cereals, egg yolk, garlic, legumes

Botanical, English and common local names of crops

English	Latin	Ndebele	Shona
Acacia	*Acacia spp.*	*isinga*	*muunga*
African marigold	*Tagetes minuta*	*imbanje*	*mbanda*
Amaranth	*Amaranthus hybridus*	*imbuya*	*mowa, bononGwe*
Bambara groundnuts	*Voandzeia subterranea*	*indluba*	*nyimo*
Blackjack	*Bidens pilosa*	*ucucuza*	*muuwa*
Cape gooseberry	*Physalis angulata*		*mubheri*
Cassava	*Manihot esculenta*	*ikhasava*	*mufarinya*
Chillies	*Capsicum spp.*	*ibilibile*	*mhiripiri*
Chou chou	*Sechium edule*		
Cleome	*Cleome gyanandra*	*ulede*	*nyevhe*
Cowpea	*Vigna unguiculata*	*dinawa*	*nyemba*
Finger millet	*Eleusine coracana*	*imajolothi*	*zviyo*
Granadilla	*Passiflora edulis*	*dinawa*	*nyemba*
Groundnuts	*Arachis hypogaea*	*amazambane*	*nzungu*
Jatropha	*Jatropha curcas*		*mupfuta, munjirimono*
Kei apple	*Dovyalis caffra*	*amaqogolo*	*mutsvoritsvoto,*
Lablab bean	*Lablab purpureus*		*chizembera*
Lannea	*Lannea discolor*	*isigangatsha*	*chizhenje*
Lippia	*Lippia javanica*	*umsuzwane*	*zumbani*
Lucky bean tree	*Erythrina spp.*	*umgqogqogqo*	*mutiti*
Madagascar bean	*Phaseolus lanatus*		
Marula	*Sclerocarya birrea*		*mupfura*

appendix THREE botanical, english and local names of crops

English	Latin	Ndebele	Shona
Mexican apple	*Casimora edulis*		*muzhanje chirungu*
Milkweed	*Sonchus spp.*	*ulimilwenkhomo*	*rurimirwemombe*
Milkwood	*Mimusops zeyheri*	*umbumbulu*	*muchechete*
Millet (bullrush)	*Pennisetum glaucum*	*inyawuthi*	*mhunga*
Monkey orange	*Strychnos spp.*	*ihlala*	*matamba*
Mulberry	*Morus alba*		*muaburosi*
Natal plum	*Carissa edulis*	*umlugulu*	*mudzambaro*
Okra	*Abelmoschus esculentus*	*indelele*	*derere*
Pigeon pea	*Cajanus cajan*		*nyandoro*
Pumpkin	*Cucurbita maxima*	*ijodo*	*mubovora*
Rubber hedge	*Euphorbia tirucalii*		
Sesbania	*Sesbania sesban*		
Snot apple	*Azanza garckeana*	*uxakuxaku*	*mutohwe, mutowe*
Sorghum	*Sorghum bicolor*	*amabele*	*mashava, mapfunde*
Sunnhemp	*Crotalaria juncea*	*umbandatashatasha*	
Sweet potato	*Ipomoea batatas*	*imbambayila, isibula*	*mumbambaira*
Tephrosia	*Tephrosia vogelii*	*muphumambene*	*nyakanyimo*
Vetiver grass	*Vetivaria zizanoides*		
Waterberry	*Syzigium spp.*	*umdoni*	*mukute*
Wild custard apple	*Annona senegalensis*	*ububese*	*muroro*
Wild fig	*Ficus spp.*	*umkhiwa*	*mukuyu*
Yam	*Colacasia esculenta*		*madhumbe*

	Common name	Latin name	Treatment of	Growing Method
	African Wormwood	*Artemisia afra*	headache, diarrhoea, worms, fever, mild asthma, cough	Cuttings or seed
	Bulbanella	*Bulbine natalensis*	thrush (mouth and throat), haemorrhoids, shingles and herpes, eczema, urticaria, impetigo	Cuttings or seed
	Centella	*Centella asiatica*	haemorrhoids, backache, sprains, eczema, urticaria, impetigo, leg ulcers, fatigue – loss of energy	Runners
	Comfrey	*Symphytum officinale*	haemorrhoids, sprains, leg ulcers. Caution: Comfrey must not be eaten or drunk or applied on open wounds	Root cutting
	Fennel	*Foeniculum vulgare*	diarrhoea, heartburn, cystitis, fatigue and loss of energy cough	Seed
	Garlic	*Allium sativum*	earache, flu, mild bronchitis, thrush, diarrhoea, worms, warts	Bulb
	Ginger	*Zingiber officinalis*	sore throat, colds, flu, nausea and vomiting, backache	Corm
	Guava leaf	*Psidium guajava*	sore throat, diarrhoea, cough, mouth ulcers	Cuttings or seed
	Gum tree leaves	*Eucalyptus spp*	earaches, colds and flu, mild bronchitis	Seed
	Lavender	Lavandula officinalis	headache, sprains	Cuttings or seed

appendix FOUR twenty herbs for home-use

	Common name	Latin name	Treatment of	Growing Method
	Lemon grass	*Cymbopogon oblonga*	colds, fever	Root division
	Mint, Spearmint Peppermint Avoid pennyroyal (M. pulegium)	*Mentha spp. Mentha viridis or spicata M. Piperita*	nausea and vomiting, mild bronchitis	Cuttings
	Nettle	*Urtica dioica*	Nosebleed, hayfever, urticaria	Cuttings or seed
	Rosemary	*Rosmarinus officinalis*	headache, poor appetite and weight loss, fatigue and loss of energy, anxiety/stress, depression	Cuttings, root division or seed
	Sage	*Salvia officinalis*	Diarrhoea, earache, sore throat	Cuttings, root division or seed
	Sour Fig	*Carpobrotus edulis*	Sore throat, thrush (vaginal and oral), diarrhoea, scabies, mouth ulcers	Cuttings
	Thyme	*Thymus vulgaris*	sore throat, thrush (vaginal and oral), diarrhoea, scabies, mouth ulcers	Seed, stem cuttings or root division
	Turmeric	*Curcuma longa*	backache, sprains, gout, boils, leg ulcers	Corms
	Yarrow	*Achillea millefolium*	nosebleed, diarrhoea, fever, fatigue and loss of energy	Seed, stem cuttings or root division
	Zumbani	*Lippia javanica*	headache, scabies, fever	Cuttings or seed

This table includes some safe common herbs, fruit, and vegetables

Condition	Common name of Plant	Dosage
Allergies		
Warning: seek doctor's advice if you have asthma		
Mild asthma	African wormwood	1 teaspoon dried herb made as tea three times a day
	Thyme	½ dried/1 teaspoon fresh leaf as tea two times a day
Allergic Rhinitis: Hay fever Sneezing, running nose, itchy eyes, blocked nose, difficulty breathing caused by the body's reaction to dust, pollen, smoke or grass. **Warning: seek doctor's advice if the symptoms get worse after taking the remedy.**	African wormwood	1 teaspoon dried herb made as tea three times a day
Cystitis an infection of the bladder that can be serious if it spreads to the kidneys. The symptoms are burning pain when urinating.	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
	Carrot tops	2 dessert spoons fresh leaves made as tea three times a day
	Parsley	1 dessert spoon fresh or 1 heaped teaspoon dried leaf made as tea three times a day max 3 days
Digestive problems		
Diarrhoea very loose bowel movements due to an infection or food poisoning. **Children should take standard oral rehydration fluid**	Guava leaf	1 fresh leaf chewed and the juice swallowed three times a day for max. 3 days

Condition	Common name of Plant	Dosage
Digestive problems continued		
Diarrhoea very loose bowel movements due to an infection or food poisoning. **Children should take standard oral rehydration fluid**	Blackjack	1 – 2 teaspoon fresh or ½ dried leaf made as tea three times a day (plants growing in full sun preferred)
	Sour Fig	1– 2 dessert spoon fresh leaf juice in a cup of water three times a day max. 2 days
	Yarrow	½ teaspoon dried or 1 teaspoon fresh made as a tea three times a day
	Sage	½ dried/1 teaspoon fresh leaf as tea two times a day
	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
	Carrot and Apple	Pulped or grated and taken as required
	African wormwood	1 teaspoon dried herb made as tea three times a day
Gastritis Pain in the upper stomach, caused by acidity, bloating and gas.	Centella	1 teaspoon dried or 2 teaspoon fresh made as tea two times a day max. 5 days
	Green Banana	2 teaspoons fresh crushed fruit in hot water three times a day max. 5 days.
	Cabbage	1 cup of juice pressed from grated cabbage (not red) between meals three times a day max. 5 days
Heartburn/indigestion Acid burning feeling in the upper stomach.	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
Nausea and vomiting The feeling or need to vomit caused by an infection, a fever stress or other factors.	Ginger	¼ teaspoon fresh or dried root eaten directly or as tea three times a day
	Mint	2 teaspoon fresh or dried leaf made as tea three times a day
	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
Poor appetite and weight loss This can be caused by illness, stress or medication.	Rosemary	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Amaranthus leaf powder	Add 1 dessert spoon of dried powdered leaf to food two times a day
	Moringa leaf powder	Add 1 dessert spoon of dried powdered leaf to food two times a day

Condition	Common name of Plant	Dosage
Earache Earaches can be caused by an infected tooth or an infection in the ear. If discharge occurs from the ear seek medical attention.	Sage	1/2 dried/1 teaspoon fresh leaf as tea two times a day
	Thyme	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Gum tree	3 – 4 leave as tea two times a day
	Garlic	¼ teaspoon crushed garlic briefly heated in one dessert spoon sunflower or peanut oil and strained: 2 drops of cooled oil applied three times a day after gentle dry mopping
Fatigue and loss of energy This can be caused by illness, stress or nutritional deficiencies.	Centella	1 teaspoon dried or 2 teaspoon fresh made as tea two times a day
	Rosemary	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Yarrow	1 teaspoon dried root made as tea two times a day
	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
Fever the body feels very hot especially the head. This is usually caused by an infection.	Lemongrass	1 dessert spoon of fresh or dried leaf and stalk made as a tea three times a day
	African wormwood	1 teaspoon dried herb made as tea three times a day
	Yarrow	1 teaspoon dried root made as tea two times a day
	Zumbani	1 teaspoon fresh or dried leaf made as tea three times a day
Gout intense pain in the joints due to a build up of waste products.	Turmeric	1 teaspoon dried or 2 teaspoon fresh root made as tea two times a day
Haemorrhoids/piles Bulging veins in the anus which can be very painful when going to the toilet.	Bulbanella	Apply poultice of 1 teaspoon fresh crushed leaf
	Comfrey	Apply poultice of 1 teaspoon fresh crushed leaf
	Centella	Apply poultice of 1 teaspoon fresh crushed leaf

Condition	Common name of Plant	Dosage
Mouth ulcers painfull blister-like spots on the tongue or other parts of the mouth caused by bacterial infection.	Sour Fig	1 – 2 dessert spoon fresh leaf juice in a cup of water three times a day max. 2 days
Nosebleed Bleeding from the nose	Yarrow	½ teaspoon dried or 1 teaspoon fresh made as a tea three times a day
	Nettle leaf	Tip of teaspoon of dried powdered leaf inhaled as a snuff three times a day max 1 day

Respiratory tract problems

Colds and flu Viral infections causing running or blocked nose, sneezing, sore throat. Flu symptoms include aching limbs, shivering and headaches and may also include diarrhoea.	African wormwood	Handful of fresh or dry leaf in pot of boiling water and steam inhaled as required (handle with care!); or 2 teaspoons fresh or 1 dried herb made as tea three times a day
	Garlic	1 crushed clove taken with water or food three times a day
	Ginger	½ teaspoon fresh root made as tea three times a day
	Ginger and lemon	½ teaspoon fresh root made as tea three times a day – add a crushed clove of Garlic and lemon juice and sweeten with honey as wanted
	Gum tree	3 – 4 leave as tea two times a day
	Lemon Grass	1 dessert spoon fresh or dried leaf as tea three times a day
Cough a productive cough occurs when the person brings up a white, yellowish or pinkish substance. A dry cough is one that does not bring up any material and is usual when someone has a cold. **Warning: If you have pain in the chest while coughing or produce yellow or pinkish phlegm you should seek medical advice.**	Guava leaf	2 teaspoons fresh or dried leaf made as a tea and sweetened with honey and lemon three times a day

Condition	Common name of Plant	Dosage
Respiratory tract problems continued		
Cough continued a productive cough occurs when the person brings up a white, yellowish or pink-ish substance. A dry cough is one that does not bring up any material and is usual when someone has a cold. **Warning: If you have pain in the chest while coughing or produce yellow or pinkish phlegm you should seek medical advice.**	Onion	1 medium sized onion with 4 cups of water boiled down to syrup and sugar or honey added to make a syrup; or chopped cover with brown sugar, leave to stand for 2 hours, strain - both 1 – 2 teaspoons as necessary
	Thyme	½ dried/1 teaspoon fresh leaf as tea two times a day
	African wormwood	1 teaspoon dried herb made as tea three times a day
	Fennel	2 teaspoons fresh or dried leaf three times a day or ½ teaspoon seeds chewed or as tea three times a day
Mild bronchitis This may be caused by a bacterial or viral infection which has symptoms of a cold. A persistent cough develops which becomes productive making breathing difficult at night. **Medical advice should be sought.**	Garlic	1 crushed clove taken with water or food three times a day
	Gum tree	3 – 4 leaves as tea two times a day
	Mints (excl Pennyroyal)	2 teaspoon fresh or dried leaf made as tea three times a day
Sore throat Pain in the throat, which may be caused by a throat infection, thrush or persistent coughing.	Guava	1 fresh young leaf chewed and the juice swallowed three times a day for max. 3 days
	Ginger	½ teaspoon fresh root made as tea three times a day
	Lemon and honey	Lemon juice and honey mixed with hot water (a pinch Chili may be added) as required
	Sour Fig	1 dessert spoon of juice pressed from freshly crushed leaves swallowed three times a day max 3 days
	Sage	½ dried/1 teaspoon fresh leaf as tea two times a day

Condition	Common name of Plant	Dosage
Skin problems		
Bites and stings Painfull, red swollen areas of skin caused by insect bites or stings	Lavender	Rub fresh leaves on affected area.
	Sweet Basil	Apply freshly squeezed juice from the leaves
	Sage	Apply freshly squeezed juice from the leaves
	Thyme	Apply freshly squeezed juice from the leaves
	Nettle Leaf	3 teaspoons fresh or 2 teaspoon dried made as tea three times a day
Burns (minor)	Bulbanella	1 dessert spoon freshly squeezed leaf applied two times a day
Boils Painful infected areas on the skin.	Pawpaw leaf	Apply 1 dessert spoon pulped leaf and bandage in place two times a day
	Cabbage leaf	Apply 1 dessert spoon pulped leaf and bandage in place two times a day
	Turmeric	1 dessert spoon of fresh crushed root applied as a poultice and bandaged in place
Eczema An allergic reaction of the skin causing a red rash that my include flaking, scaling of skin and tiny blisters. Try to avoid scratching. If there is no improvement seek medical advice.	Bulbanella	1 dessert spoon freshly squeezed leaf applied two times a day
	Centella	2 teaspoon fresh or 1 teaspoon dried made as tea and applied topically two times a day
Impetigo A bacterial infection of the skin causing an itchy rash of red spots which become blisters which break and exude a yellow liquid. It first appears on the face scalp, hands or knees	Centella	1 teaspoon dried or 2 teaspoon fresh made as tea two times a day

Condition	Common name of Plant	Dosage
Skin problems continued		
Ringworm/tinea a fungal infection of the skin causing itchy ring-like patches.	Pawpaw latex	Apply fresh milk directly to affected area two times a day
Scabies A skin disease caused by tiny mites which burrow under the skin causing an itchy rash.	Sour Fig	Fresh leaf juice applied topically to affected areas two times a day max. 5 days
	Zumbani	1 dessert spoon fresh or dried made as tea and applied topically two times a day
Shingles and herpes zoster These viral infections cause painful, itchy sores all over the body.	Bulbanella	1 dessert spoon freshly squeezed leaf applied two times a day
	Thyme	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
Skin ulcers An infected wound which is often hard to clear up.	Comfrey	Apply poultice of 1 teaspoon fresh crushed leaf
	Centella	Apply poultice of 1 teaspoon fresh crushed leaf
	Turmeric and Honey	Mix 1-2 dessert spoons pulped fresh or ground dried root with honey and apply two times a day
Urticaraia This itchy red rash is an allergic reaction. It looks like insect bites and can spread all over the body	Bulbanella	1 dessert spoon freshly squeezed leaf applied two times a day
	Centella	1 teaspoon dried or 2 teaspoon fresh made as tea two times a day
	Nettle leaf	3 teaspoons fresh or 2 teaspoon dried made as tea three times a day
Warts are small white lumps on the body caused by a virus.	Garlic	Place a slice of fresh garlic on wart and bind in place overnight.

Condition	Common name of Plant	Dosage
Stress related problems		
Anxiety feeling very worried or frightened about something	Sage	½ dried/1 teaspoon fresh leaf as tea two times a day
	Lemon Balm	½ dried/1 teaspoon fresh leaf as tea two times a day
	Rosemary	½ dried/1 teaspoon fresh leaf as tea two times a day
Backache pain in the back can be caused by stress, arthritis, rheumatism or strain. Backache that is very long lasting or painful should be attended to by a doctor.	Centella	1 teaspoon dried or 2 teaspoon fresh made as tea two times a day.
	Turmeric	1 teaspoon dried or 2 teaspoon fresh root made as tea
	Ginger	½ teaspoon fresh root made as tea three times a day
Depression feeling very sad	Rosemary	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
Headache and migraine pain in the head that could be caused by stress, neck pains, toothache, earache, eyestrain, heat stroke. If the headache persists for more than 24 hours or is very strong you must seek medical attention.	African wormwood	A handful of fresh leaves crushed and inhaled
	Rosemary	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Lavender	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Zumbani	Inhale handful of fresh or dried leaves or 1 teaspoon fresh or dried leaves as tea three times a day
Sprains Damage to the fibres in an arm or leg causing swelling, stiffness and pain.	Comfrey	Apply poultice of 1 teaspoon fresh crushed leaf
	Centella	Apply poultice of 1 teaspoon fresh crushed leaf, and 1 teaspoon dried or 2 teaspoon fresh made as tea two times a day
	Lavender	Apply poultice of 1 teaspoon fresh crushed leaf
	Turmeric	1 teaspoon dried or 2 teaspoon fresh root made as tea two times a day

Condition	Common name of Plant	Dosage
Thrush (mouth and throat) This is a fungal infection which can affect the mouth or genitals. It causes pain, itching and a white raised rash. It can be caused by a weakened immune system and sometimes after taking antibiotics	Sour Fig	1 dessert spoon of juice pressed from freshly crushed leaves swallowed three times a day max. 3 days
	Garlic	1 crushed clove taken with water or food three times a day
	Bulbanella	1 dessert spoon freshly squeezed leaf gel three times a day
	Thyme	½ teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Sweet Marjoram/ Oregano	1 teaspoon dried or 1 teaspoon chopped fresh leaves as tea three times a day
	Ginger	½ teaspoon fresh root made as tea three times a day
Thrush (vaginal) Painful itching white rash	Sour Fig	1 dessert spoon of freshly squeezed leaf juice inserted three times a day max. 3 days
	Thyme	½ teaspoon dried or 1 teaspoon chopped fresh leaves taken by mouth three times a day
Worms Thread and pin worms are parasites which live in the body. They may cause itching of the anus. Medical treatment should be sought for roundworms and tapeworms which appear when passing stools.	Garlic + Basil spp.	Take one crushed clove plus one tea-spoon fresh leaf as a tea two times a day
	Pumpkin seeds	1 heaped dessert spoon of dried ground or powdered seeds (can be sweetened with honey)
	African wormwood	1 teaspoon dried herb made as tea three times a day
	Fresh Pawpaw seeds	10 fresh seeds chewed and swallowed two times a day (peppery) NB not to be taken in pregnancy

INDEX

This index contains references to advice for ways of treating different kinds of sickness. It does not replace the medical advice you get from your clinic or doctor. Always go to your doctor or clinic if the advice does not help.

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