

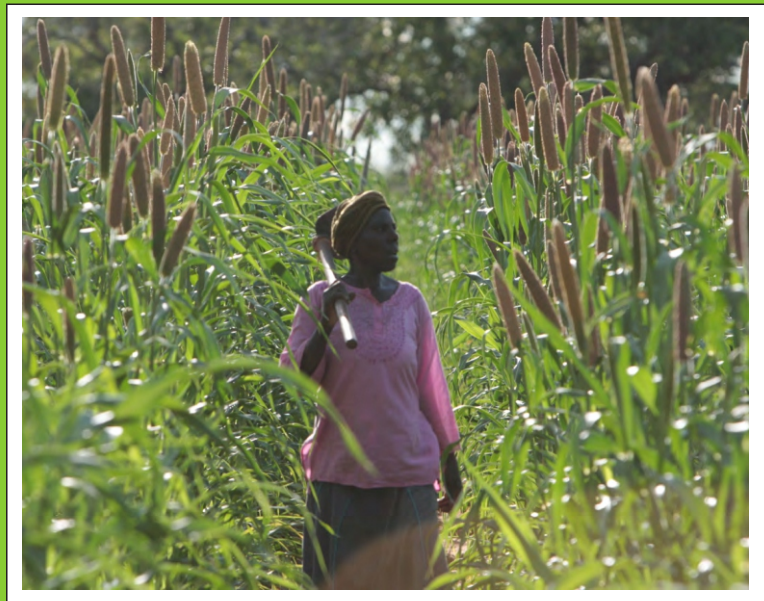


USAID
FROM THE AMERICAN PEOPLE



Healthy Harvest

An Adapted Illustrated Guide for Amalima Community Trainers



MODULE 2: *Agriculture*



GROWING AND COLLECTING NUTRITIOUS FOOD




Aim

To help participants understand and communicate the relationship between agriculture, food and nutrition security and concepts of food safety and good agriculture practices.

This module will look at ways to increase access to sufficient safe, nutritious food all year round through good agriculture practices and sustainable collection of wild-harvested food from natural areas.



Facilitator's notes

 In order to have energy, grow and stay healthy, families need:

- access to sufficient, safe and nutritious food throughout the year
- a healthy environment with adequate access to safe clean water and improved sanitation facilities





Discussion

Time: 30 minutes

Materials: flip chart, marker pens, **Visual Aid**



Good agriculture practices contribute to the production of safe, nutritious food and income without damaging human health or the environment which people and agriculture depend upon.

Discussion guide



Steps

1. Explain that in order to stay healthy we must have access to a wide range of nutritious food all year round. Say this means that food must be:
 - available (grown, collected or bought in sufficient quantities all year round),
 - affordable (the price is reasonable enough for people to purchase it or buy needed inputs to produce it), and
 - acceptable (people are willing to prepare and eat the food).
2. Ask participants where their food comes from. How much of the food they eat is produced on the family farm, how much is collected from natural areas such as forests and how much do they buy?
3. Discuss whether families could save money and improve their family nutrition by growing, collecting, buying or consuming more nutritious food. (Note: if people become malnourished and suffer sickness and poor health there are a number of hidden costs as well as medical bills. Sick people are less productive than healthy people. Sick people often cant do as much work in the fields or earn as much money.)
4. Use **Visual Aid 1** to show how nutrients can be lost or food contaminated at different stages between agricultural production and consumption. Ask participants to describe what they see in the Visual Aid. Point out the different stages and explain any terms which the participants may not understand.
5. Ask participants how poor practices can cause nutrients to be lost or food to be contaminated in the food production process (in **Visual Aid 1**). Write their answers on the flip chart and use the information in Table 5 to add any points which may have been missed.
6. Discuss the points raised.

Picture 1: FOOD PRODUCTION

Stages where food can be contaminated or lose nutrients

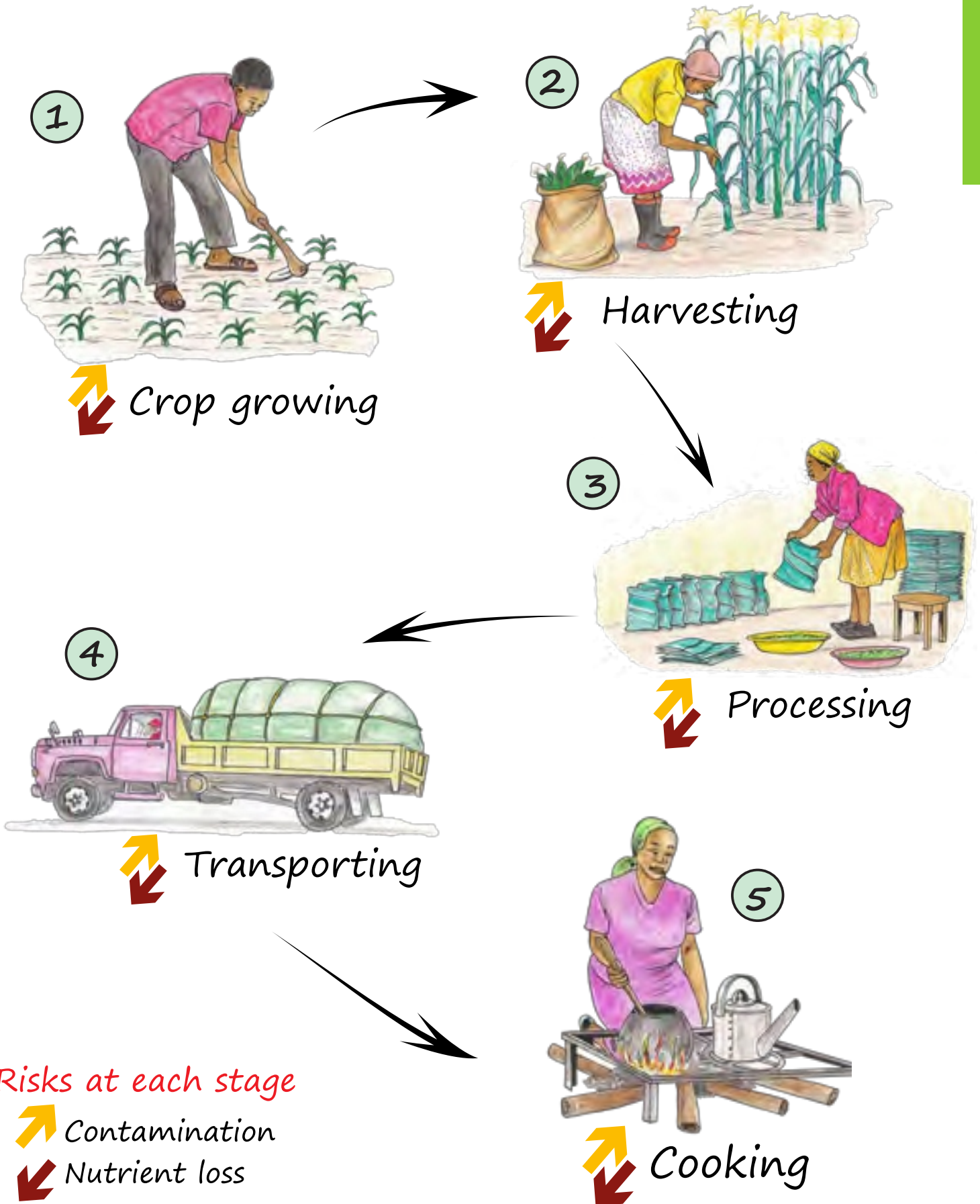


Table 1

Potential Causes of Contamination or Nutrient Loss During Food Production

Process	Nutrient loss and food contamination can be caused by:
Crop and livestock production	Poor agricultural practices leading to low yields and low-nutrient crops or livestock. Inappropriate use of agricultural chemicals and veterinary drugs and poor hygiene
Harvesting handling and storage	Not harvesting crops at maturity. Damage to produce caused by poor handling. Poor hygiene, exposure to moisture, pests and diseases
Processing, value addition, packaging, transport and marketing	Damage to produce caused by poor handling. Poor hygiene, exposure to moisture, pests and diseases leading to contamination. Improper processing and storage before consumption
Food preparation and feeding practices	Poor choice of meals (lack of diversity and incorrect amounts for different family members). Poor hygiene in food preparation and during feeding/ eating. Lack of protection from contamination and spoilage. Overcooking and other poor cooking methods.





Activity

Time: 50 minutes.

Materials: flip chart, marker pens

1. Explain that in this activity we are looking at Good Agricultural Practices that can improve access to nutritious food.
2. Divide the participants into five groups (of no more than five people) and give each group a piece of flip chart paper.
3. Ask the groups to write down examples of farming methods which:
 - increase** the diversity, quality and quantity of nutritious food which is available to the family;
 - conserve** or improve natural resources (such as soil and water) since these increase agricultural production in the long term; and
 - reduce** contamination of food through exposure to germs, pests and diseases and harmful chemicals.
4. After 15-20 minutes, bring the groups back together to report back. Ask one group to present their comments, and discuss these with all the participants. Then ask the other groups to read out any additional points which they came up with. Write these on the flip chart and discuss them. You can supplement discussion points with the information in Table 6.

Table 2: Good Agricultural Practices that Enhance Food and Nutrition Security

Good agricultural practices	Impact
<p>Grow a wide range of nutritious, locally adapted food crops and livestock</p> <p>Retain and plant seed varieties from the local community because they are better adapted to the local</p> <p>Introduce new nutritious crops and livestock breeds such as orange-fleshed sweet potatoes.</p>	<p>Increases the diversity, quality and quantity of available nutritious food.</p>
<p>Use crop residue for animal fodder, compost or mulch.</p> <p>Avoid annual ploughing. Practice conservation agriculture.</p> <p>Practice crop rotation and intercropping.</p> <p>Use compost, manure, mulch and liquid fertilisers.</p>	<p>Conserves water and soil fertility, which increases long term</p>
<p>Check crops regularly in order to correctly identify a pest or disease.</p> <p>Plant at the correct time of year.</p> <p>Use ash or home-made sprays from plants.</p> <p>Follow the safety and application instructions for all chemicals used.</p> <p>Practice good hygiene when handling crops and livestock.</p>	<p>Reduces contamination of food through exposure to germs, pests and diseases and harmful chemicals. This means better health for us, our families and communities</p>



2

PLANNING WHAT TO PRODUCE

Farmers need to consider which crops and animal products are most nutritious.



Aim

To help participants choose suitable crops and livestock to produce.



Facilitator's notes

In Module 1 we found out that we need to eat more body-building foods such as animal products and legumes, as well as more fruits and vegetables.

These foods are not eaten often enough because:

- Traditional fruit and vegetables, legumes and small grains are seen as inferior to foods which are bought in shops, or exotic crops.
- Legumes and small grains require a lot of labour to grow, process and cook thus putting an extra burden on women.
- Families are reluctant to slaughter their livestock for food as they are valuable assets which can be sold in time of hardship.





Discussion

Time: 30 minutes

Materials: flip charts, markers, pens



Discussion guide



Steps

1. Introduce the session by explaining that in order to help us choose the most nutritious crops to grow and livestock to keep, we need to know the main nutrients which they contain.
2. Remind the participants that the food group system can help us to understand which foods contain body-building nutrients, energy and protective nutrients.
3. Remind them that in Module 1 we found out that we need to eat more body-building foods (such as animal products and legumes), food which is high in fibre (such as brown rice and small grains) and food which is rich in vitamins and minerals (such as fruit and vegetables). In particular we need to eat food containing vitamin A and iron. Eating food rich in vitamin C help us absorb iron from other food.
4. Ask participants to explain why people in Zimbabwe do not eat as many legumes, small grains and fruits and vegetables as they did in the past. Write their responses on the flip chart and discuss ways in which people could be encouraged to grow and eat more of these things.
5. Ask them which livestock they keep and which products are obtained from them. Ask which animal products (such as meat, milk, eggs) they usually buy, and how often they buy them and eat them. Are animal products consumed more regularly from small livestock or large livestock? Why?
6. Discuss any cultural or religious reasons which stop people from eating some livestock products. Are any members of the family restricted from eating certain livestock products such as eggs? Why?
7. Suggest ways in which livestock products could be consumed more frequently (such as by keeping small livestock).





Discussion

Time: 30 minutes

Materials: flip charts, markers, pens

Discussion guide



Steps

1. While water is scarce in our regions, it is a good practice to always have a backyard garden at home.
2. These gardens do not have to be very big, even 3 beds with various vegetables can provide good nutrition for your families. Show **Visual Aid 2**.
3. In the homestead you can also plant fruit trees. Ask the participants which fruit trees they think they can plant. Show **Visual Aid 3**.
4. Also keep small livestock. Women are encouraged to form saving & lending groups specifically for the procurement of small livestock. Show **Visual Aid 4**.
5. You should try to give animal source foods to your family and also generate income by selling excess stock. Show **Visual Aid 4**.





Time: 40 minutes

Materials: For each group: flip chart paper, marker pens

1. Ask participants to list what they need to think about when planning which nutritious crops to grow or livestock to keep in their area. Make sure the following are included:

- Nutrient content of the different crops/livestock products
- Types of crops/livestock which suit our area
- The time of year when crops should be planted
- The soil requirements of different crops
- The sun/shade requirements of different crops
- The water requirements (are they drought-tolerant or water-loving?)
- What types of food, housing and fencing do the livestock require?

Where the crop should be grown for good management (in vegetable garden, orchard or fields).

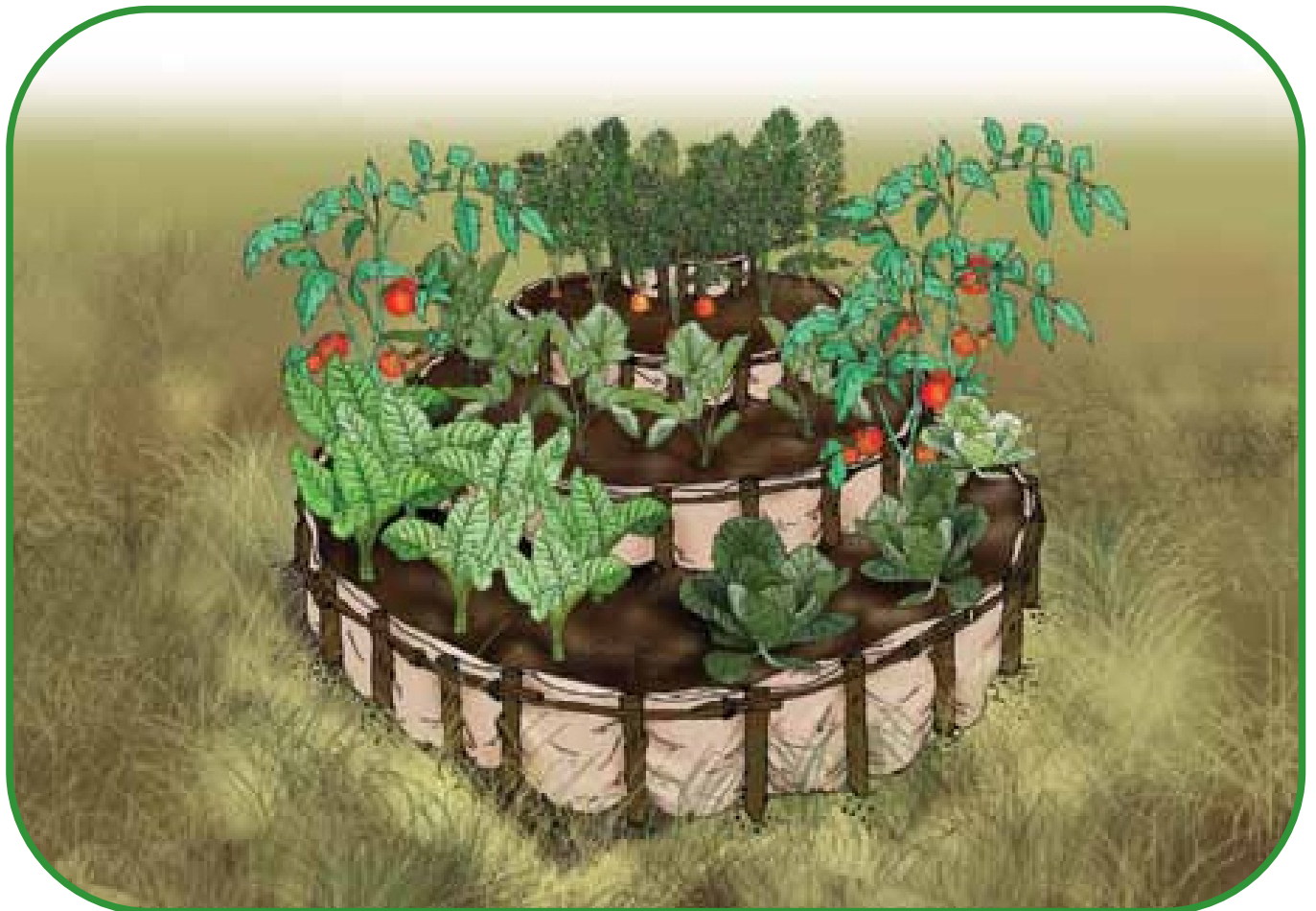
2. Divide the participants into five small groups and allocate each a different food group. Ask each group to make a crop plan (using the template given in Table 9) to show what they could produce to supply a family in their area with enough nutritious food (from their food group) all year round. They will need to note the time of year when the crop can be planted. Encourage the participants to list as many different types of crops and livestock as possible but note that they should be realistic in their plan in terms of what they can produce in their area.
3. Give them 20-30 minutes to complete their plan.
4. Bring the participants together and ask each group to present their work. Discuss how realistic the plans are for the Natural Region.

Table 3: Making a Crop and Livestock Plan

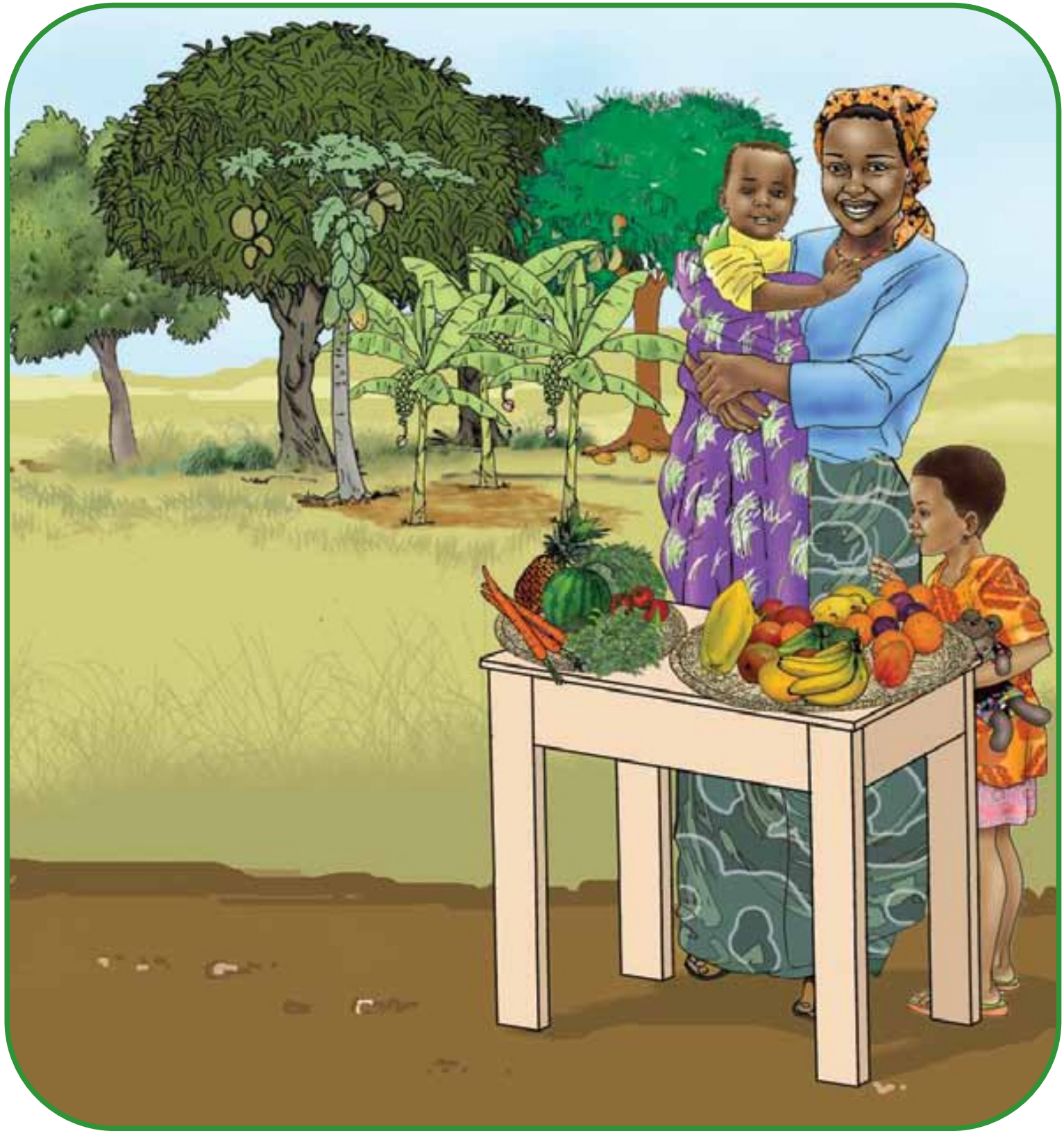
Food group	Crop/livestock	Time of year
Staples		
Fats/oils		
Legumes		
Animal products		
Fruits and vegetables		



Picture 2 : HOME GARDENS



Picture 3 : FRUIT TREES AT HOME



Picture 4: KEEP SMALL LIVESTOCK



3

NUTRITIOUS WILD-HARVESTED FOOD



Aim

To help participants understand the nutritional value of wild-harvested food.



Facilitator's notes

- Many nutritious foods can be collected from natural areas such as forests and wetlands.
- Such foods include honey, fruit, and vegetables, roots and tubers, tree leaves and pods, herbs, mushrooms, insects and small animals (Show Table 4 for the common ones).
- Many people do not know the value of these foods and consider them to be inferior to food which is bought or cultivated.
- These foods are free to produce or collect and families can save money by using them to supplement their diet.
- Natural habitats where these nutritious plants grow are often under threat from agriculture, fires, deforestation, and overgrazing.
- It is important to protect and conserve wild habitats, so that these foods continue to be available.



Table 4

Common Wild-Harvested Foods

Type	Examples
Insects	caterpillars (<i>madora, amaximbi</i>), termites (<i>ishwa, amahlabusi</i>), locusts (<i>zwiwiza, intethe</i>), beetles (<i>ndere, marupwa</i>)
Other small animal products	birds, mice, fish
Fruit	baobab (<i>muuyu, umkhomo</i>), buffalo thorn (<i>masau, umpafa</i>), monkey orange (<i>mutamba, umkemeswane</i>), snot apple (<i>mutohwe, uxakuxaku</i>)
Leafy vegetables	blackjack (<i>muuwu, tsine, ucucuza</i>), amaranth (<i>bonongwe, mowa, imbuya</i>), spider flower (<i>nyevhe, ulude</i>)
Tubers and roots	wild potato (<i>tsenza</i>)
Mushrooms	field mushroom (<i>chikunguwo, ubudzuge</i>), apricot mushroom (<i>maphunha, vufirifiri</i>), termite fungi (<i>nhedzi, makhowa</i>)





Discussion

Time: 20 minutes

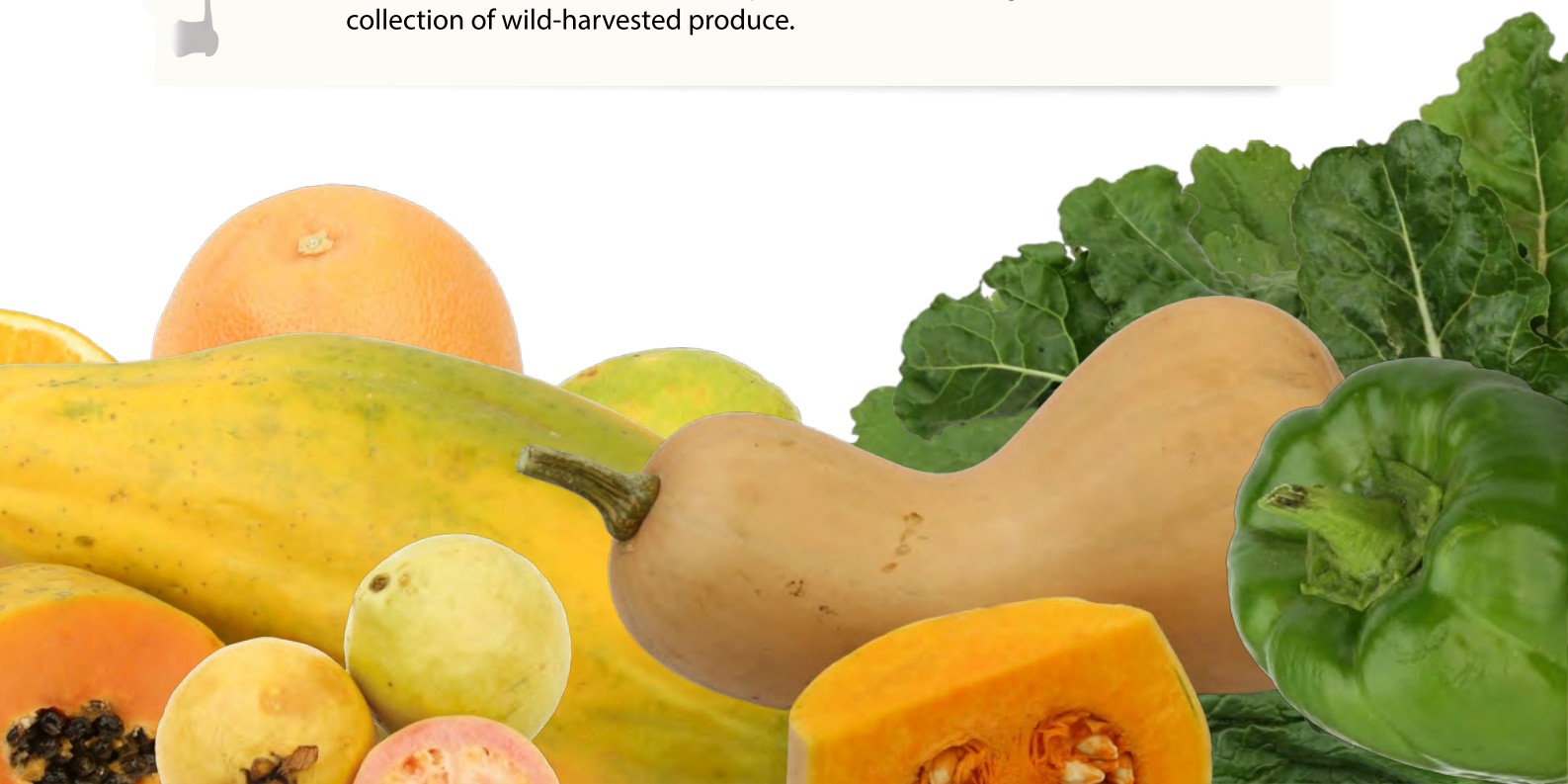
Materials: flip charts, markers, pens

Discussion guide



Steps

1. Introduce the session by saying that you are going to talk about the nutritional benefits of collecting wild-harvested foods.
2. Ask them which wild-harvested foods they like to eat. Where do these foods come from?
3. Discuss reasons for these foods not being eaten more often and note that they are very good sources of nutrients.
4. Ask whether there are any cultural or traditional restrictions in their community on ownership, harvesting and selling wild-harvested produce. Discuss what would happen if people collected too much of it.
5. What other threats are there to the availability of wild-harvested produce (ie agriculture, burning, deforestation, overgrazing)? Discuss how natural areas can be protected to encourage sustainable collection of wild-harvested produce.





Time: 30 minutes

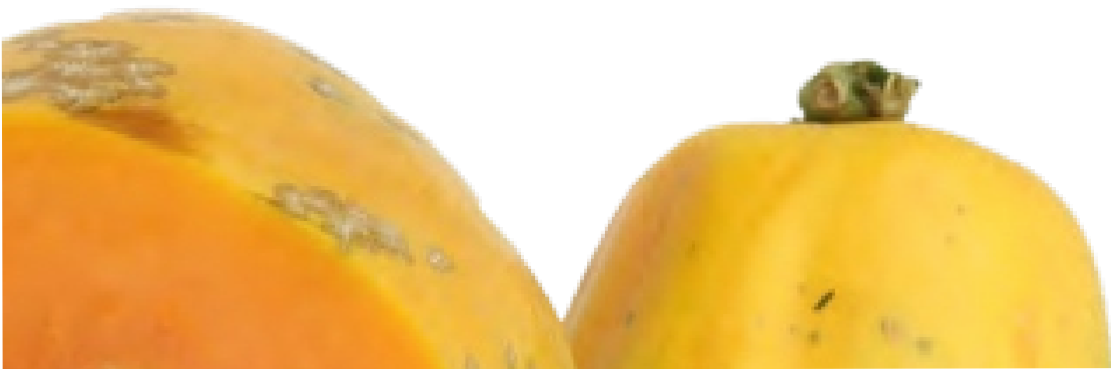
Materials: flip chart, marker pens

1. Divide the participants into small groups according to different categories of wild-harvested produce, such as fruit, vegetables, animals/insects and mushrooms.
2. Ask each group to make a calendar showing the different times of year when the wild-harvested produce in their community is available for consumption. Ask them to identify which main nutrients can be found in the food type.
3. During report backs encourage participants to share their knowledge on the different methods for cooking and preserving wild-harvested produce.
4. Discuss the dangers of wrongly identifying wild-harvested produce, especially mushrooms.



Wrap up

1. Ask participants what they have learned from the session. Make sure they include:
 - Many nutritious wild-harvested products can be found in natural areas in the community.
 - Natural areas should be protected to increase access to and conservation of wild-harvested produce.
2. Discuss why it is good to eat wild-harvested produce.
3. Ask them how they will use this information.





Time: 30 minutes

Materials: flip chart, marker pens

1. Divide the participants into small groups according to different categories of wild-harvested produce, such as fruit, vegetables, animals/insects and mushrooms.
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4

Harvesting, preparing and preserving food



Aim

To help participants understand and be able to communicate safe harvesting and handling methods for different types of produce.



Facilitator's notes

- ✎ Food can become contaminated and nutrients lost at every stage between production and consumption.
- ✎ Below are some harvesting, handling and storage tips:
 - Wear clean clothes and wash hands and tools before harvesting.
 - Use clean dry containers.
 - Choose the coolest time of day during a period of dry weather.
 - Do not eat produce that has been recently sprayed.
 - When using chemicals, read and follow the instructions.
 - Avoid damaging dry produce or allowing it to come into contact with water.
 - When digging up potatoes, dig carefully and avoid breaking the skin.
 - Throw away damaged produce and do not pack ripe fruit with the unripe.
 - Store your harvest in a cool, dark, dry, well-ventilated place, protected from rats, mice and insects.



Discussion

Time: 15 minutes

Materials: flip charts, markers, pens

Discussion guide



Steps

1. Introduce the session by explaining that you are going to talk about safe ways to harvest, process, prepare and store food in order to maintain its nutritional value. Show participants **Visual Aid 1** and ask them to identify the different points when nutrient loss and contamination can occur. Make sure to review the key points given in the Facilitators notes for Session 3.1.
2. Ask participants to describe any problems they have had with harvesting, handling or storing crops or animal products.
3. Show **Visual Aid 5**. Ask participants if they are familiar with that type of contamination and if they know what causes it. Explain using notes on the card.



Picture 5: AFLATOXINS

- This is a chemical produced by mould.
- Contaminates all grains and especially ground nuts due to poor harvesting and storage practices.
- Do not eat foods with aflatoxin.
- Even cooking does not remove the contamination.





SAFE FOOD PREPARATION



Aim

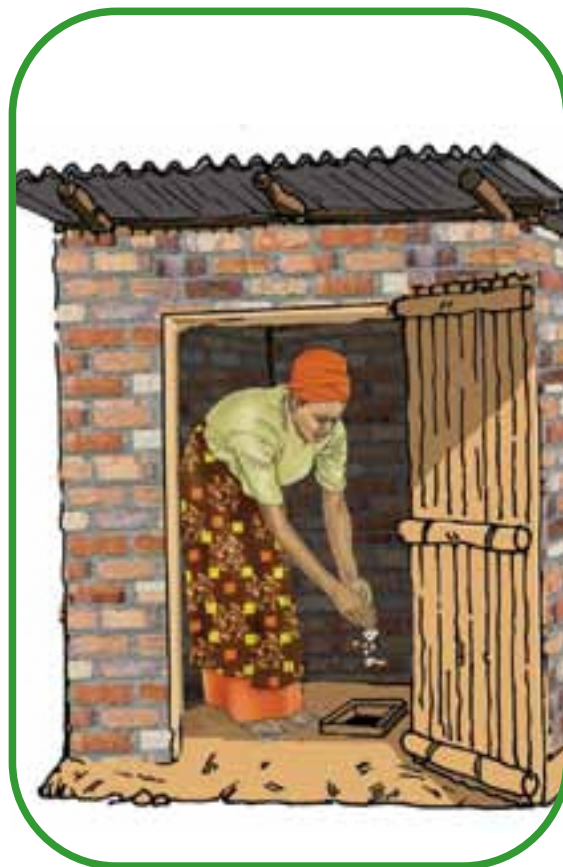
To enable participants to understand and demonstrate safe, healthy ways to prepare food.



Facilitator's notes

- ✎ It is important to prepare food safely to avoid illness and malnutrition.
- ✎ All family members should use clean, properly constructed toilets and children's faeces should be deposited in the toilet.
- ✎ All family members should wash their hands properly after using the toilet, changing nappies, as well as before and after eating meals. Show **Visual Aid 6**.
- ✎ All household rubbish should be safely disposed of in rubbish pits or bins which are covered to protect from flies and animals.
- ✎ Organic waste and livestock droppings should be cleared up regularly and used as live manure.
- ✎ Animals must be kept away from food.
- ✎ Food should be stored off the ground and away from agricultural or other chemicals.

Picture 6: FAMILY HYGIENE



Wash your hands
with running water
using soap or ash.



Discussion

Time: 40 minutes

Materials: flip charts, markers, pens

Discussion guide



Steps

1. Introduce the session by explaining that you are going to discuss some hygienic ways to prepare food to avoid contamination
2. Show participants **Picture 7**. Ask them to identify the activities taking place at each stage of the flow diagram.
3. Share the points below:
 - wash your hands with soap or ash before handling food and often during food preparation.
 - wash all surfaces, utensils and equipment used for food preparation.
 - protect kitchen areas and food from insects and animals.
 - wash baby's hands with soap or ash before feeding.
4. Show Picture 7 again. Ask the participants about the figure of the woman cooking. Explain that the stove she is using is an eco-stove which uses less fuel and cooks faster. This stove can help reduce the work load of women at home and free up time for them to do other things. Also by using less wood, it helps reduce deforestation and helps protect the environment.



Picture 7: FOOD HYGIENE





Discussion

Time: 30 minutes

Materials: flip charts, markers, pens

Discussion guide

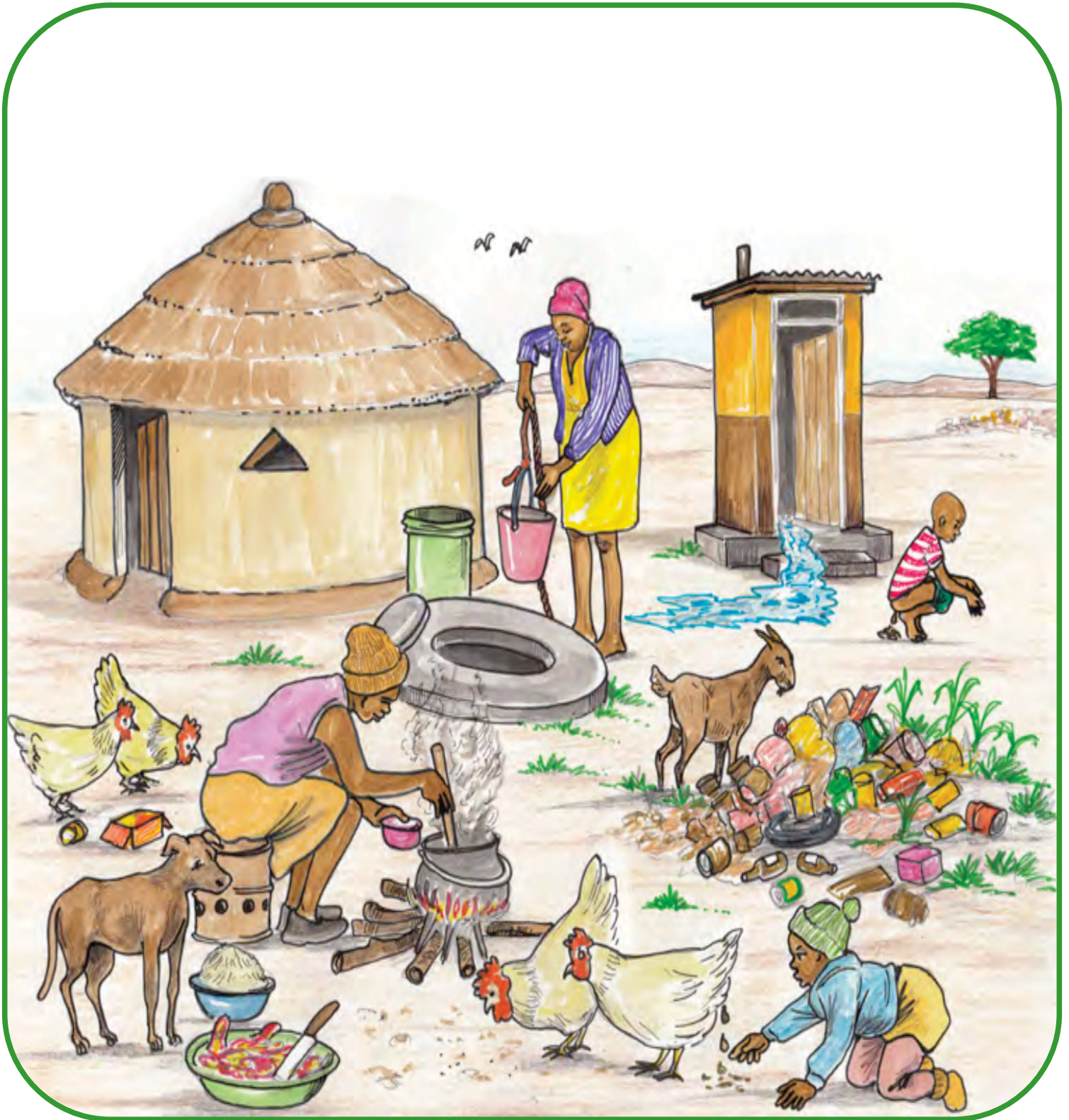


Steps

1. Introduce the session by explaining that you are going to discuss some hygienic ways to prepare food to avoid contamination. Show the participants **Visual Aid 5** (the malnutrition / infection cycle) and review how malnutrition can lead to illness and how illness can in turn cause malnutrition.
2. Next show the participants **Visual Aid 8**.
3. Ask participants to point out high-risk practices shown in the picture. What could be improved in the household? Write their responses on the flip chart.
4. Note that in order to prevent disease and get the most nutrients from our food we should have a clean, hygienic home environment. What other hygiene measures should we take when preparing and eating food?



Picture 7: AN UNSANITARY HOME





PROCESSING FOOD



Aim

To help participants learn and demonstrate effective methods for processing food.



Facilitator's notes

The advantages of processing food are:

- Surplus crops can be preserved instead of having to be sold for a low price or thrown away when they go bad.
- Nutritious food is available for consumption or sale throughout the year.
- The shelf life of food is increased for storage, transport and marketing.
- Processing must be done correctly otherwise it can cause the food to become contaminated with germs or toxins which can lead to illness.



Drying produce is cheap and easy to do.



Dried food can be added directly to cooking or reconstituted by soaking water before cooking.



Dried food can be made into powders and added to food to make it more nutritious.



Most fruit, vegetables and root crops can be dried.



Show participants the list of drying tips and discuss.

Drying Tips

1. Drying best done when it is not raining.
2. Crops must be placed in a drier within 48 hours of harvesting.
3. Sort produce into groups of similar ripeness.
4. Wash in cool, clean water and remove any blemished or damaged sections.
5. Peel, cut, slice or shred the produce into pieces of similar size so that they take the same amount of time to dry.
6. Green vegetables should be blanched (immersed in hot, salted water for a very short time) before you dry them to keep their colour and flavour and improve the shelf life.
7. Avoid sun-drying. Drying in the shade reduces loss of nutrients.
8. Dry produce as quickly as possible – preferably in one day.
9. Place the produce on trays or racks in a warm place with moving air.
10. Use a raised frame, protected with gauze to keep out dust and insects.
11. Store the dried produce in clean, dry, dark, airtight containers in well-ventilated places to avoid mould.



Discussion

Time: 40 minutes

Materials: flip chart paper, marker pens, samples of processed food, green leafy vegetables, pot, clean water, heat source, sieve, chopping board, knife, samples of different produce for drying.

Discussion guide



Steps

1. Explain that you are going to talk about ways to improve drying methods in order to conserve nutrients and reduce contamination.
2. Ask participants why we process food. List their responses on the flip chart and add other advantages mentioned in the Facilitators notes.
3. Ask participants to brainstorm products which can be made from processed fruit and vegetables. Encourage them to describe any processing methods which they know.
4. Ask participants which produce they dry and which methods they recommend. Ask participants if they ever dry meat.
5. Write the names of products on the flip chart and ask participants whether they have come across any problems when drying food such as mould, dust or insect infestation.
6. Show the participants samples of different dried products and discuss tips to improve drying methods of crops and meat. Use the Facilitators notes to help with this discussion.
7. Explain what blanching means.
8. Talk about different driers and describe a solar drier to the participants and explain its advantages.





SESSION 3.5: USING DRIED PRODUCTS



Aim

To help participants learn and demonstrate how to use dried products.



Facilitator's notes

- ✎ Once products have been dried they can be stored for later use or sold. One way to use dried products is to grind them to powder. Different powders can be mixed together to form nutritious blends which can be added to porridge, soups, stews and relish to improve the nutrient content. Dried fruit powders can be stored and made into fruit drinks by adding water.
- ✎ Some nutritious powders include:
 - Mixed vegetable powder
 - Baobab powder
 - Fish powder
 - Groundnut powder
 - Sweet potato powder
 - Mango powder
 - Guava powder
- ✎ Dried legumes such as cow peas and cereals such as maize and sorghum can be milled into flour.
- ✎ Legume flour can be made by roasting cleaned dried cow peas or beans and then pounding or grinding, and finally sieving the flour.
- ✎ The flours from legumes, cereals, and dried root & tuber crops can also be mixed to make porridges, isitshwala or for baking.



Discussion

Time: 40 minutes

Materials: flip chart paper, marker pens

Discussion guide



1. Introduce the session by explaining that you are going to talk about ways to use dried products in cooking in order to increase the nutrient content of food.
2. Ask participants if they ever eat dried products and get them to describe how they usually cook them.
3. Note that a convenient way to use dried products is to make them into powders which can be added to stews, soups and relishes.
4. Describe how to make and use some different powders.
5. Talk about flour blends made from cereal, legume and root and tuber flour. Note that blends can be used to make nutritious *a* or porridge. Describe how maize flour (which is less nutritious,) can be mixed with millet or sorghum flour (which contain more nutrients). Note that this is a good way to encourage people to eat more nutritious *a* and porridge.



Picture 8: SOME DRIED FOOD

