Session 9

TREES FOR HUMAN FOOD AND MEDICINE

Objective

1. To appreciate the variety of trees that can supply food and medicine for home consumption and/or for income generation.

9.1 What are the various foods we get from trees?

Amazingly, a great variety of different human foods come from trees, either directly or indirectly. You certainly know many of these foods already, but perhaps you have not put all your knowledge about food from trees together, and perhaps some of the examples we will cover will surprise you. Practically all parts of different trees may be eaten by humans, either directly or indirectly. We have all eaten fruit from trees, whether native trees or introduced ones like Carica papaya (Pawpaw). We have also eaten nuts and drunk coffee from the “beans” of coffee trees and tea from the leaves of tea shrubs. You may not be as familiar with eating the leaves, flowers, and roots of trees, but for some trees these parts of the tree are very nutritious foods. Finally, other foods we eat come indirectly from trees. It is first processed by other living creatures like honey by bees and mushrooms by fungi.

9.2 What are some advantages of growing trees for human food?

The advantages of this are similar to those mentioned in Chapter 6 for growing trees for fodder, namely that many trees can grow and produce food during the dry season without irrigation and that the tree leaves and fruits are very nutritious, rich in protein, vitamins, and minerals.

9.3 Trees with edible leaves and flowers

The leaves and flowers of Sesbania sesban are edible, and are eaten by people in West Africa and in Asia. In Indonesia, people eat the new shoots and leaves of Leucaena. When tender and sweet they make an excellent relish with cassava or yams.

Perhaps the best tree with nutritious and delicious leaves and flowers is Moringa oleifera (which simply is called Moringa), a tree originally from India but now growing widely in southern and eastern Africa. The leaves are rich in protein, vitamins A and C, and the minerals calcium, iron, potassium and phosphorus. About 45 grams of fresh, raw leaves will meet your daily need for vitamins A and C and help you keep healthy and resistant to infections. Of the minerals in Moringa’s leaves, iron is most helpful when you are recovering from malaria and your body is struggling to build up the proper number of red blood cells (so many of which have been destroyed by the malarial parasite). Health workers often treat malnutrition in small children and pregnant and nursing mothers with either fresh or powdered Moringa leaves.

How to eat Moringa

Moringa leaves can be eaten raw, when they have a spicy flavour. You might want to mix the raw leaves with lettuce or tomatoes in a salad. You may also cook the leaves like any green vegetable. Boiling the leaves in water for five minutes is sufficient. If cooked, the leaves will no longer be spicy, and unfortunately the vitamin C will be destroyed by the heat. Moringa leaves can be easily dried and pounded into a powder, which should be stored in a sealed, dark container. Dry the leaves in the shade to prevent loss of vitamins, especially vitamin A. Moringa’s young, green fruit can also be cooked and eaten like okra. Old green fruit can also be eaten, but then you should first remove the woody outer layer before cooking it. The seeds can be fried or roasted and eaten like groundnuts.

9.4 Some good fruit trees

The list of good fruit trees is almost endless. High on the list of good exotic fruit trees for you to plant around your house, if you do not already have them growing there, are Mango, Lemon, Orange, Guava, and Pawpaw. Perhaps, however, you have several exotic fruit trees on your farm but have neglected the indigenous fruit trees.

Indigenous trees, or trees that have grown in your area for a long time, are often growing well on your soils. In Zambia for instance you may find trees like Tamarindus indica, Piliostigma thonningii, Sclerocarya
birrea, Vitex doniana, Ziziphus mauritiana, Uapaca kirkiana, and Syzygium cordatum.

1. What are some other good indigenous fruit trees you know in addition to those mentioned? What fruit trees do you have in your area? Have you ever tried to plant them? If so, with what success? If not, will you be able to do so this year? Why or why not?

2. Try to grow some of the local trees yourself. Experiment with some different ones growing in the remaining woodland near your farm.

9.5 Can some fruits be eaten as a vegetable?

Yes, indeed. Some fruits can be eaten as vegetables. An example of this was already mentioned above in the case of Moringa. Another example is the Leucaena fruit. When young it is good cooked as a vegetable, and the amount of protein in these young pods is almost the same as it is in peas and beans.

9.6 How fruits can be preserved and processed

Many fruits can be processed into tasty jams, juices, and alcoholic drinks, both for home consumption and for income generation.

Dried fruit

One way to preserve fruit is by solar drying. Almost any fruit can be sun dried. Some do not need treatment before they can be dried, while others simply need to be cut into slices and placed on drying trays. Bananas quickly turn brown after peeling. This can be avoided by placing them in a solution of lemon juice and water for 5 to 10 minutes before placing the slices on drying trays.

Advantages of using solar drying or smoking

- A solar dryer is ideal and can be locally made.
- It prevents loss from insects, rodents, chickens and other birds.
- It provides safe products with a shelf life of approximately 6 months, depending on the type of fruit, how much dry matter the fruit contains, and how the dried fruit is packaged and stored after processing.

Drying guidelines

- Scrub clean and dry all equipment first.
- Thoroughly wash hands before handling food.
- Use mature, freshly harvested fruits.
- Wash fruits and cut out any damaged areas.
- Pre-treat fruits if they need this such as dipping banana slices in lemon juice and water.
- Spread pieces thinly on trays.
- Dry fruits under direct sun during hot, windy days when humidity is low.
- When dry, place in waterproof containers with tight-fitting lids.
- Package fruits in small quantities, then place these packages in a larger container.
- Avoid opening and closing containers frequently, as this can cause contamination and mould.
- Store in a cool, dry, dark place to help preserve colour and flavour.
- As a safety measure, examine stored food occasionally.
- If fruits have mouldy patches, discard entire batch.
Jam making

Almost any fruit can be made into jam or jelly by cooking it with sugar to preserve it.

Steps in making jam

- Use firm, ripe fruits.
- Chop up or mash larger fruits to speed up the cooking.
- Use a large cooking pot so that water can evaporate quickly.
- Use a long-handled wooden spoon for stirring to avoid getting splashed with boiling jam.
- Simmer the fruit until it is soft and all juice and pectin have been extracted.
- Add a little water to fruits that contain little of their own, such as guava, to prevent burning.
- Add sugar and stir thoroughly until it dissolves.
- Increase heat after sugar has dissolved, till mixture reaches setting point.
- Remove pot from heat and let jam cool.
- Remove scum from the top of the jam with an ordinary spoon.
- Pour into sterilised jars and seal.
- Store in a cool, dark, dry, well ventilated place.

Trouble-shooting jam

- Runny jam: The jam is undercooked, or has too little pectin for it to set.
- Fruit floats in the jam: Fruit was not ripe enough or the jam was not cooked long enough.
- Jam darkens on top: Too much air left in the jar.
- Jam darkens or fades: The jar contains too much air, is not well sealed, the storage place is too warm or the jam has been left in direct sunlight.
- Jam starts fermenting: Not cooked long enough so too much water is left, or it has too little sugar.
- Mould or yeast forms on top: Jars were not sterilised or were filled cold, or the lid is not closed tightly. To save the jam, scoop off the top part including the mould, and the rest of it can be eaten.

9.7 How can you improve your marketing of fruits?

Here are some ideas on marketing fruits. Share your experiences as you go over the ideas.

During harvesting and collecting of fruits

- Fruit that has fallen off the tree is usually ripe. Keep it separate from the unripe fruit as it deteriorates quickly.
- Harvest fruits before they are ripe to give them longer shelf life and for ease in transportation.
- Avoid harvest methods such as using stones to dislodge the fruit as this damages the fruit.

During transport

- Protect the fruit from direct sun as this causes deterioration.
- Transporting the fruit on the back of an open truck or on top of the bus exposes it to the sun.
- Use containers such as crates to avoid squashing the fruit.
Value adding

- Grade the fruit according to how ripe it is and its size, and remove all the rotten ones.
- Wash the fruit in clean water.
- Dry the fruit ready for processing.
- Package it as required.
- Prepare the fruit into juice or jam for marketing.
- Dry the fruit for eating off season.
- Consult organisations, middle men and extension officers.
- Ensure effective distribution of the fruit as fruits are perishable.
- Identify the market and the product suitable for the market.
- Ensure that the packaging is suitable for the market.
- For export, package the fruit so that it does not get squashed as the fruit can ripen in transit.
- Abundance of fruit leads to a drop in price as supply outstrips demand. Process the fruit to ensure that you can continue to sell it when it is off season.

9.8 Some medicinal uses of trees

You know of course about many different local trees that provide a variety of medicines for your family. Tree medicines have been used traditionally not only in Africa, but around the world. Written records of their uses date back to 5,000 years ago in China and India. To mention just one example of a local tree with many medicinal uses, Baobab has valuable medicines in its leaves, flowers, seeds, fruit pulp, bark and roots. Teas from the leaves and flowers, for example, are used for respiratory problems, digestive disorders, and eye inflammation.

Since many of these local medicinal trees have no doubt been removed from the land in and around your village, it will be to your advantage to gather seeds of some of these trees and plant them on your farm - and of course to care for them during their early years of growth. One Indian tree that is now becoming very popular for its medicinal use is the Neem tree (Azadirachta indica). You can drink its leaf tea, though it is quite bitter. Drink it twice a day to overcome a malaria attack.

**Neem against malaria**

Put a handful of fresh Neem leaves in about a glassful of water, bring the water to a boil, allow it to cool, drink half of the tea, wait about 8 hours and then drink the rest of the tea. Repeat for 2 or 3 days. Use this as a complement to your malaria treatment drugs.

Neem is, by the way, another good example of a multipurpose tree. In addition to its medicines, Neem has pest control agents in its leaves and seeds, and it has termite-resistant wood. Neem is a good shade tree, and its wood will provide excellent firewood or charcoal. Oil in its seeds can be used as a lubricant, paint thinner, or ingredient for soap.

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<thead>
<tr>
<th>Name of tree</th>
<th>Part used as food</th>
<th>Medicine</th>
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<tbody>
<tr>
<td>Marula</td>
<td>Nuts</td>
<td>Bark to treat wound</td>
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<tr>
<td></td>
<td>Fruits</td>
<td>Oil from nuts for ear-ache and fresh wounds</td>
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<tr>
<td></td>
<td>Juice</td>
<td></td>
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</tbody>
</table>

*Perhaps someone in the group can bring a fruit drink to refresh your next session?*
Another tree, called Chinaberry or Persian Lilac, is often mistaken for Neem. You can, however, easily tell them apart if you look carefully at the leaves. See figure for the difference.

Neem fruit and tree  Chinaberry leaf and fruit

Use a list to summarise your knowledge on trees for human food and medicine.