Module 6
Food Resource Management

Module code: PHFS06Q

WORKBOOK

Student Name:	
Student Number:	
Cell Number:	
Name of Promoter:	
HFS Site / Centre:	

Activity 1.3 Household structures and composition

Complete this activity in your workbook

Answer also the following questions

1. Think about the roles that are played in your family.

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2. Identify your role/s in your household and discuss how they are important to you and then consider how they are important for the rest of the family.

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3. What impact does your role have on the roles of others?

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4. What does it allow others to do or not to do in terms of benefits for the household?

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Activity 1.4 Become conscious of gendered roles in routine tasks

Complete this activity on your own or in groups in your workbook

Aim: To become conscious of gendered roles in routine tasks

Time: 1 hour

What you must do

1. In the table below, who is most likely to perform the identified activity? Insert your answer into the spaces provided.

A gendered thinking exercise

Activity	Who is most likely to perform this task, a man or woman and do they do?
Levelling the ground	
Cutting poles	
Stripping bark off of poles	
Cutting grass for thatch	
Mixing clay for walls	
Applying clay to poles for walls	
Tying down the thatch	
Make winnowing baskets	
Grind the maize by hand	
Harvest the beans	
Drying the harvest	
Store the harvest	
Sell the some of the harvest	

2. What patterns do you see?

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Activity 1.5 Map the flow of household food resources and livelihood activities

Complete this activity in your workbook

Aim: To map the household resource activities related to food and the roles of each household member

Time: 1 hour

What to do

1. Take a piece of A4 paper or use a flip chart for focus groups. With a pen draw the house and the different household food activities in the middle of the page.
2. The food inflows should be represented by arrows pointing towards the house. The outflow arrows should point towards the related food activity. Put arrow heads on both ends if the action is in two directions.
3. Indicate along each line the people responsible for each activity. Use symbols to represent the different people (see Figure 1.5 below).
   Note: The numbering in the study guide differs
4. Make a list of each activity each person or persons in the household are responsible for and draw lines to the activity.

Activity 1.10 Household assets and vulnerabilities

Complete this activity in on your workbook

1. Identify the assets and their vulnerability.

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2. What assets does your household have? Make a list of them in the table below.

Category of asset	Description of resource	What would make this asset vulnerable

3. What type of resources are they?

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4. What would make each of these assets in your list vulnerable?

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Unit 2 Improve food storage and processing practices for food stability

Activity 2.1 Applying preservation techniques

Complete this activity on your own or in groups in your workbook

Aim: To gain practical experience in understanding the process and benefits of preserving by applying a food preservation technique

Time: 45 min hour

What you must do:

1.	Preserving with sugar: preventing the growth of mould and bacteria

Jams, syrups and jellies

Any fruit except avocado can be made into **jam** (from the juice and the flesh of the fruit) or **jelly** (made from the juice of fruit only). When citrus fruits are used for jam – these are called **marmalade**s. When moulds and yeasts do sometimes form on the surface, remove them with a clean spoon because the jam is underneath is safe to eat.

To make jam: choose firm fruit, discard or remove any brown parts. Wash and peel the fruit. Remove seeds if they are large like in apples or peaches, or mangoes. Small seeds such as in berries like mulberries are too small to worry about. Cut the fruit into small pieces. Put the fruit into a cooking pot and just barely cover with clean water. Allow to stand for a few hours or overnight to extract the juice from the fruit. Bring to the boil and cook gently until the fruit is tender (this is when you can cut it with the side of a fork or spoon). Measure how many cups of juice/fruit you have now in your mixture. In general, you add 1 cup of sugar and ½ cup of freshly squeezed or bottled lemon juice to every cup of juice/fruit. (If you can let this mixture soak overnight, your jam will have a better flavour and will set (become firm) with less cooking). Stir the jam over a gentle heat until the sugar is dissolved, then bring to a fast boil and continue boiling uncovered until the jam is set (be careful – the mixture may boil up over the sides of your pot). You can add a large teaspoon of margarine to the boiling jam to help stop it from boiling over. To test for setting, stir the jam well, then use a spoon to put a small amount (less than a spoonful) on a clean cool saucer. When it is cool push the drop of jam gently with your finger, if it crinkles, the setting point has been reached. Set the pan aside to cool slightly. Ladle the jam into clean hot jars (up to 0.5 cm from top), cover with an airtight later of thin plastic cut from a clean sugar bag and screw on the lids. You can also melt candles in a clean tin can and pour a layer of this wax on top. When cool, you can

screw on the lids. This makes an airtight seal. The wax can be removed when you open the bottle, washed and used again next time you make jam. – When your bottles of jam are cool, wipe them clean, label with a name and date and store them in a cool dark place.

Note: Any bottles that you can wash in boiling water are suitable. Wash and then boil the bottles as well as the lids in clean water for 10 minutes. Turn upside them down to drain and dry. It is best to keep the bottles hot by placing them in your oven if you have one. If you cannot keep the bottles hot, be very careful with your hot jam – put it in carefully to prevent the bottles from cracking. If you are not able to sterilise your jars by boiling and keeping them hot – then you must wash the bottles in very hot water and understand that your jam will not keep as long as it would if your bottles had been sterile.

Here is a question: *How effective is solar energy for sterilizing bottles?* If you want to find out then you can experiment by constructing a solar heater that could sterilize bottles with water or heat.

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2. Make at least one of the recipes in Annexure C:

Answer the following questions (refer to your notes in the text and in the Annexures):
Why do you think that it is important to wipe the jars clean after filling and sealing, before you store your bottled product?

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In the recipe you used, what ingredients were used to prevent the growth of moulds and yeasts?

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What role did the cooking play?

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What role does the wax or the tightly screwed on lid play in preserving the contents of the bottle?

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What role does the bottle play in preserving the ingredients?

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Think about the need for bottles if you were to make jams and chutneys more regularly. Suggest strategies for how you could obtain the bottles and the right kind of bottles.

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Activity 2.2 Commercially available food and packaging

Complete this activity on your own or in groups in your workbook

Aim: To develop a practical understanding of food preparation and processing of commercially available food.

Time: 1 hour

What you must do:

1. Using the definitions given on page 9 of your learning guide, link the food item to the terminology in the second column.
2. The first section is completed for you as an example: Understanding terminology

Understanding terminology

Food item	Terminology		Explanation
	Primary Processing	Secondary Processing	
Fresh oranges in orange bags		or	Simple packaging
Freshly squeezed orange juice		or	Alternative way to serve fresh food
Orange flavoured gelatine (jelly powder)		or	Complex combination of foods, dried and powdered
Peanuts dried in shells		or	Drying to preserve
Peanut flour (traditional pounded/ground peanuts)		or	Grinding as an alternative way to serve food.
Peanut brittle (candy made from peanuts)		or	Complex combination of foods
Dried rice grains		or	Drying to preserve
Nestle infants rice porridge		or	New food – complex conversion of rice to baby food
Rice crispies (cereal)		or	Extruding and puffing of rice grain
Chicken braai cuts		or	Portioning for convenient marketing
Chicken flavoured		or	Extruded soya beans with

Imana		artificial chicken flavouring
Royco chicken soup powder	or	New Food - dried grain paste, flaked and flavoured with chemicals that resemble chicken flavour

Second Step: Go to a local supermarket or food store

- Ask the store manager if you can see the external packaging that fresh food arrives in before being displayed on the shelves. Notice things like apples individually wrapped in paper and packed in boxes. (Note: the paper stops the apples from losing moisture which would make them wrinkle).(You may not be able to do this exercise depending on the cooperation of the store manager)
- What kinds of food are individually wrapped, what does the wrapping look like – what do you think it is for – to prevent bruising or to keep out contaminants?
- What kinds of food come in what types of containers – paper, cardboard, bottles, crates, multiple layers?
- How many are sealed plastic? What is underneath the plastic?
- What purpose do these wrappings serve?
- Look at labels of packaged foods and notice the ingredients.

Compare three different tins of foods: List the ingredients in the spaces provided: use the same sequence of ingredients as shown on the packaging.

Tinned tomatoes

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Bully Beef or other tinned meat:

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Pilchards in tomato sauce

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Compare three different bottles of foods:

Mayonnaise

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Beet root salad

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Bottled sauce: (such as HP Sauce, Mrs Ball's Fruit chutney, Steers or Nando's sauce)

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Compare three different foods that come in boxes or paper/cardboard packages:

Imana soy mince

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Icing sugar

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Mabele (sorghum) meal

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Reflection: What trends can you see in these examples? Which have the most ingredients? What ingredient is the most common? Which of these tins do you think has had the most processing and or preserving? Why do you think this is so? Write your conclusions in the space below.

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Prepare any questions that you may have to take to your contact session about processing of foods. Record them here so that you will not forget them

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Activity 3.2 Mapping Individual Skills using the Hand, Heart, Head

Complete this activity in groups in your workbook

Aim: To help people recognize the variety of strengths each person has

Time: 30 min

You will need: 3 Flip chart sheets and some koki pens or crayons

What to do:

1. Ask a person or people in your group to think about what they do well. It might be their work or something else they are known for within their community

2. Explain that these skills and capacities can fall into different categories, including intellectual (head), physical (hand), and emotional (heart). Give examples of each type:

   Head: analysis, organization, writing
   Hand: cooking, farming, dancing
   Heart: compassion, humor, teamwork

3. Ask people to brainstorm about their own skills and capacities in these areas. Have people share their lists and continue to build them. People who know one another can add to each other's lists.

4. List the skills on separate charts for each category. See the example on the following page. One can also develop as a team an interview schedule covering the themes below and any other important ones.

Hands

Hands

Activity 3.5 The inflow and outflow of the household leaky bucket

Complete this activity on your own in your workbook

Aim: To visualise the intra-household economy and identify the inflow and outflow of household resources using the concept of the leaky bucket

Time: 30 minutes

What to do

1. Use the examples of a resource and food insecure housheold. Give a short description of what barriers may become blockages or gates preventing people from accessing and utilizing adequate nutritious food or food resources to share

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2. Make a list of each of these "gates" or kind of decisions in column one, the barriers preventing not aquiring enough nutritious food and in the last column the messages or opportunities to release the gates, change perceptions and encourage behaviour change. Use the gates lables as heading form the two channels diagram Fgure 3.5.

Decisions to take at each Gates	Example of barrier to nutritious food	Message to encourage behaviour change
Food at grocery store		
Buying		
Food on way to home		
Seeds and inputs at store		
Buying seed and inputs		
Taking care of plants / animals during growth		
Harvesting		
Clean water		
Cold Storage		
Food cupboard		
Energy or fuel		
Cooking		
Preparation for table		
Sharing		

Activity 3.6 The inflow and outflow of the household leaky bucket

Complete this activity on your own in your workbook

Aim: To visualise the intra-household economy and identify the inflow and outflow of household resources using the concept of the leaky bucket

Time: 30 minutes

What to do

1. Identify the resources that **flow into the bucket** and those resources that **flow out** of the bottom of the bucket. Use the information identified to complete the diagram below.

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2. Those inflows and outflows which are large amounts of resources should be represented by thicker lines. This will show which are the major resources flowing in and those flowing out.

3. What is the difference between a household and a community leaky bucket? Explain.
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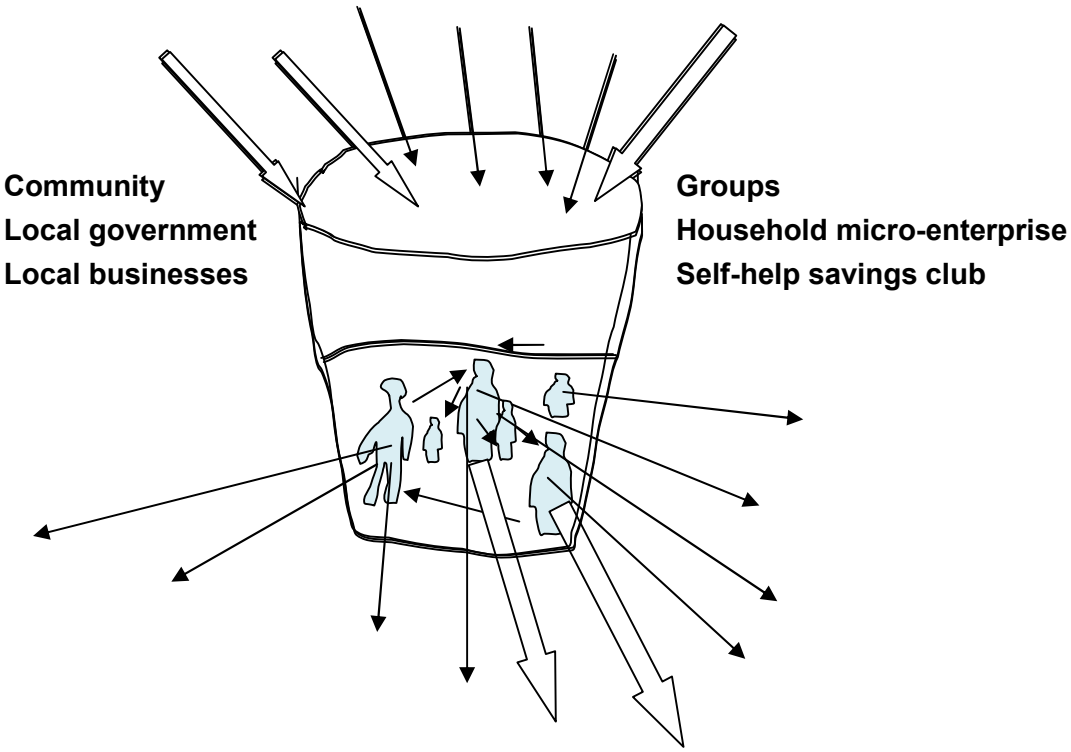
4. In Unit 1 we looked at the flow of food and income resources in the household through its food stores (food resources, household assets and goods for transporting, storing, processing, preparing and sharing food). What is flowing into your household and what is flowing out of the household as a unit?

5. Label each arrow according to the amount of assets / food and income resources that flow in and flow out. You may add arrows.



Activity 3.7 Mapping food security through social networking.

	Complete this activity on your own or in groups in your workbook

Aim: To explore creative options for reducing vulnerability to food insecurity.

Time: 30 min

What to do

In this exercise, I want you to look at how the farmers of Luseyse were able to utilize social strategies for diversifying their livelihood options and reducing vulnerability to food insecurity. Even though these families were not food secure themselves they used social networking to increase their food security.

The following case study is of a farmer's household in East Africa

Case Study 5: Sempebwa Basajansolo

Sempebwa and his wife Esther have a son and two daughters: Nakyejjwe (5), Nakiyimba (4) and Sebowa (4months). The family lives in the village of Luseyse, Nabigasa Sub-County. Sempebwa said: "We have always had problems with agriculture in this area. The soil quality is not ideal and there has always been a problem securing good seed. We had no animals and therefore no source of manure. This is why when Concern Worldwide consulted us about our needs we told them we wanted animals. Concern Worldwide provided the poorest families with cows, goats and pigs. When one animal produces offspring it is given to another family. That way the community manages to provide for itself.

My family has benefited so much from receiving this one cow. The cow is now two years old. My land was very poor and in the past I was unable to afford fertilizer which is very expensive. As a result my crops suffered and I was unable to provide my family with enough food. Since I received the cow, I have been able to spread cow manure in my fields and my yields have increased as a result. I have 3 acres of land and plant mostly maize.

I also have a small vegetable garden. Presently the cow can provide enough manure to cover one acre as well as my vegetable garden. However when the cow matures it will hopefully be able to provide fertilizer for 2 acres. Concern Worldwide also gave us 2kg of hybrid maize seed which produces better quality maize. With the improved seed and the manure I produced a far better maize yield in the last harvest. The cow is also providing us with milk. It produces 10 litres per week at the moment but when it matures fully it will produce 15 litres per week. The milk produced is shared amongst five families in the area with each family getting 2 litres per week. Previously none of these families had milk as it was too expensive. Our standard of living has improved, our health has improved.

1. What food security strategies are being employed in this case study?

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2. What key resources (income and food) have helped these families move towards food security?

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3. How have these resources been used?

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4. Have any products been processed?

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5. What measurements does Sempebwa use to indicate an improvement in food security?

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6. In the space below, do you think that you could draw and map a diagram of the concepts and relationships behind how this community has improved its food security?

   Hint: What are the important concepts/actions/inputs/outputs in this example? What are the relationships between them? Use arrows to indicate?

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Diagram of East African farmer household (See examples in Unit 1)

Activity 3.11 Exploring the role and process of food technology adaptation

Complete this activity on your own or in groups in your workbook

Aim: Explore the role of technology adaptation in a successful development interaction between researchers and indigenous practice.

Time: 1 hour

What you must do:

Read the article in the Box below:

Adding value through the use of appropriate technology

Easing the work of making palm oil: Women solve a pressing problem

Author: Barbara Böni

Abstract

Most African women process food with traditional methods which demand much labour and bring low returns. Many technologies have been developed to ease their workload and improve processing efficiency, but few have been adopted in rural areas. The technology seems appropriate to those who designed them - mostly men - but not to the women meant to use them (ECA 1989). Moreover, they often do not address women's most urgent problems (Stamp 1990). Barbara Böni tells how women in Côte d'Ivoire helped to identify and adapt new technology to meet their needs.

Article

In the Toura village of Dozéré in the rainforest zone of Côte d'Ivoire, ways of improving food processing were studied. The aim was to define criteria for successful development of food processing technology for rural areas. Over four years, the project involved socio-economic analysis of village activities, problem identification, developing an improved technology, testing and evaluating it in the village, extending it and evaluating its adoption.

Learning by taking part

To get to know village women's problems and their views about possible improvements, a participatory approach was taken. This involved staying in a village, observing and taking part in village activities, listening to villagers and asking questions. Special attention was given to women's workload and earning possibilities and to food processing. Having a

technical training, I found it very interesting to apply sociological methods like participant observation (Casley & Kumar 1988) and informal interviews (Rhoades 1982). This helped me understand local problems and how they are interlinked. During this process, cultural aspects were important. The traditional structures of authority and decision-making had to be respected. Although I focused on young wives as the main food processors, it proved vital to consult with and involve also the men and older women.

Local food technology

Both women and men in the village helped make an inventory of all types of food processing practised there. I observed and then participated at least twice in each process and noted all problems mentioned by the women. In a group, these points were discussed and we listed priorities for improvement. The main problem defined by the women was the hard and tiring work of extracting oil from fruit of the oil palm (Elaeis guineensis). The men cut the fruit from the wild palms in their fields. The women cook it in oil drums. Usually, a group of young men pound it with pestles in a big mortar. The women then mix the mass of fruit pulp and kernels with water. The kernels settle to the bottom. The fibres are washed and squeezed out twice to remove the oil. The resulting mixture of oil and water is boiled for about two hours. After cooling, the palm oil is skimmed off. The women said the squeezing by hand was especially strenuous (tiring). Palm oil plays an important role in human nutrition in Côte d'Ivoire, particularly in rural areas in the west, where it is often the only source of fat. Most oil made in this way is consumed directly by the producers. The remainder - perhaps 7500 tons per year - is sold through informal channels.

Criteria for improvement

An improved technology for palm-oil processing had to meet socio-economic and cultural criteria. The villagers had to be able to afford the investment needed. The technology had to bring higher cash gains and reduce workload. The women had to be in a position to control the technology and gains. As for technical criteria, the new technology had to be simple enough for the women to cope with, preferably similar to the traditional one. The equipment had to be strong and reliable, and local maintenance had to be possible. Its size had to suit the annual amount of raw material processed. The end product and production efficiency had to be equal to or better than with the old technology.

Women's views

These criteria were discussed with the women interested in improved oil extraction. It was most important to them that the work be eased, without changing the taste of the oil. Reacting to young men's remarks that, with a "machine" (with motor), they could also make oil, the women stressed that they wanted to continue doing it themselves. Each woman could invest or repay only FCFA 1500 (about US$ 5.60) a month. The women wanted to invest no more than they could repay within a year. The first step was to see if anyone in the village or region knew of another way of extracting oil. This was not the case. But, 600 km away, in plantations near Abidjan, there were oil presses which had been used in colonial times. The next step was to seek information from research institutes and literature on small-scale palm

oil extraction. The screw press (without a motor) designed by the Royal Tropical Institute (KIT) in Amsterdam met the criteria best.

Women test and adapt

A first sample of this press was built by local manufacturers near Abidjan and initially tested by a few women living nearby. They found that the basic frame was too large and the sides of the oil receptacle were too low. These were changed. The modified press was then brought to the village, where the women agreed to test it for a year. They expressed many ideas to improve it. The perforated cylindrical cage was replaced by a lighter one. Handles were added to make it easier to carry. Two cooking and reheating drums were added to the existing two, so that more women could work at the same time. The women decided how to organise the use of the press. Together with the men, they chose a new processing site.

The women's leader was responsible for the press, while three young women assisted those wanting to use it for the first time. For this service, they were given a small part of the produced oil or were helped later in their fields. With the new press, about 11% more oil could be extracted from the palm fruits. Use of water and fuel wood could be reduced by 63% and 28%, respectively. The oil was of better quality: water content was lowered by 29% and content of acids and peroxide by 57% and 59%, respectively. This means the oil can be stored longer without losing quality. The women said the work with the press was not as strenuous as the traditional method.

Confidence grows

In 1990, 19% of the village women extracted part of their palm oil with the new press. This grew to 79% in 1991 and to 94% in 1992, when 34% of all palm oil extracted in the village came from the new press. At first, the women used the press to process only small amounts of their palm fruit. They feared that the resulting oil would not keep as long as traditional oil (up to 10 months). In 1993, for the first time, two women dared to process all their fruit with the press, having experienced that the oil keeps well. Already in 1991, at a meeting with all 62 women in the village, I asked if they wanted to keep the press. The majority decided to buy it. To raise the FCFA 100,000 needed, I suggested that each woman using the press pay into a central fund or give part of the extracted oil, to be sold later in common. They preferred to collect the money in two rounds 4 months apart from all women, like they do for other collective activities (water-pump repair, house construction for teachers, village medical box).

More villages interested

The last stage of the project was studying the spread of the technology in the region. A reliable local manufacturer (a technical school in the region) was found that would produce the press on order. Women's leaders, project workers, extensionists, technical school directors and many others were invited for a demonstration day. Some women from the testing village showed and explained the process and answered questions. The word began to spread. The manufacturer could sell two presses in the first year and eight in the second. It looks as though a basis has been laid for wider application of this improved food processing technology.

Merit of the approach

This success is certainly due to the approach taken: developing and testing the technology together with the end users. The research started by defining only the field of action: food technology. The specific problems to solve and the type of technology needed were defined by the women. The key step in this development process was diagnosing the existing situation together with the villagers, who set their own priorities for improvement.

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Present address: Van 't Hoffstraat 13-1 NL-6706 KE Wageningen Netherlands.
Note:
Additional technical information about the palm oil press can be obtained from FW Korthals-Altes, TOOL, Sarphatistraat 650, NL-1018 AV Amsterdam, Netherlands

Answer the following questions in the spaces provided in your workbook.

1. What was the problem identified for improving food processing in Dozéré village?

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2. With whom did the researchers choose to work with to determine a solution for the problem? What was the reason why these persons were selected?

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3. Describe what the researchers did and what the women did to find a solution using a 'participatory' process.

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4. Compare the traditional method for producing the palm oil and the new improved method. In doing so consider the following:

4.1 What criteria (principles) were used to determine an improved methodology?

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4.2 From the story, identify the adaptations that the women made to improve their traditional practices.

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4.3 What were the benefits of the improved methodology?

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4.4 What affect did the processing have on the quality of the oil?

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4.5 What effect did the new method have on the quality of life for the women responsible for extracting the oil?

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5. How did this project impact livelihood strategies through the adaptation of a foreign technology (the screw press designed by the Royal Tropical Institute, Holland) and create sustainable local links between production and consumption?

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Activity 3.12 Farmers pro-active goal setting: Logical analysis of yellow maize

Do this activity on your own or in groups in your workbook

Aim: To explore the logic of and communicate the farmers' proactive goal setting as livelihood strategy.

Time: 1 hr

What you must do

Read the following case study and answer the questions that follow.

Logical analysis of 'yellow maize' case study

A group of female farmers faced with the challenges of increasing uncertainty about the length the rainy season for their rain fed crops recently decided that it was in their best interest to add (diversify) a new cultivar of maize (3 month yellow maize) to the white maize they already grow. White maize has a high yield, is the preferred maize for meals, but takes longer to mature and is more at risk to the unpredictable nature of climactic change. They have heard that although under irrigation the yield is higher, 'rain fed yellow maize is tastier'.

The rainy season is about to begin and although they don't know how long it will last this year, previous patterns usually show that for the first 2 months, the rain will be fairly regular. Also, because they knew that this was what they wanted – they were able to communicate this to their extension officer in sufficient time for seed to be located, purchased and delivered before the growing season began.

This is an example of management: it involved identifying opportunity, planning, and action to achieve the desired goal. When the seed is delivered, step one of the goal will be complete. When the seeds are planted and growing, step 2 will have been achieved. When the ears are matured and picked for eating, the purpose of ensuring a supply of maize (mealies) will be achieved.

Answer the following questions:

1. Step one of the management process – Identifying an opportunity.

1.1 What was the **weakness** in the situation which influenced the choice?

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1.2 What **stress** prompted the women to change their farming strategy?

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1.3 What **knowledge** did the women have?

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1.4 What **resources** did the community have at its disposal to use this knowledge?

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1.5 What did the community not have?

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1.6 What **opportunity** did the women identify as their potential goal?

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2. Step two: identify the goal (note you must always be able to measure a goal)
In one sentence state the farmers' goal.

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3. Step three of the management process – identifying steps (strategies) to achieve the goal

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3.1 What smaller goals (sub-goals) needed to be reached before the goal could be achieved?

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3.2 What activities were done to achieve these steps?

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3.3 What inputs and tools were needed?

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Think back to what you have already learned about nutrition. What other advantages were there in adding yellow maize to the household consumption patterns?

Now that you have thought through the answers, you can use a table like the one below to show the linear logic of the process that the women followed to plan for success:

Table 3.6 A logical framework for diversifying to yellow maize

Narrative (the story)	**Activities that need to be done**
Goal:	....
Purpose:	....

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Sub Goals: **1.** …… …… …… …… …… …… **2.** …… …… …… …… …… …… **3.** …… …… …… …… …… ……	 **1.**…… …… …… …… …… …… …… **2.**…… …… …… …… …… …… …… **3.**…… …… …… …… …… …… …… …… …… …… …… ……