



global forum for rural advisory services
forum mondial pour le conseil rural
foro global para los servicios de asesoría rural

Nutrition-Sensitive Extension



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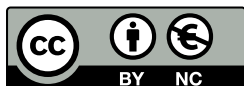
In 2012 GFRAS developed the “new extensionist” document, which details the role that extension plays in an agricultural innovation system, and the strategies and capacities needed (at individual, organisational, and system level) <http://www.g-fras.org/en/activities/the-new-extensionist.html>. Based on this document the GFRAS Consortium on Extension Education and Training emerged to promote the new extensionist, mainly through training, curricula review, and research on extension.

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1. Before you begin

1.1 General instruction

This module should be used in conjunction with the workbook provided. As you read through the module, you will find different visual features that are designed to help you navigate the document.



Figure 1: Icons used to highlight important information throughout the manual

The module makes use of keywords (difficult or technical words that are important for you to understand). To ensure that you receive the full benefit from the module, keywords will be marked the first time they occur and de-fined in a box containing the keywords symbol. Make sure that you read the definition of any words that you are unsure about.

1.2 Activities

Each session in the module will contain various types of activities to help you become knowledgeable and competent. The module contains three types of activities:

A **pre-assessment** is to be completed before reading through the module overview and introduction, and a **post-assessment** is to be completed once the entire module has been covered. This will measure the degree to which your knowledge has improved by completing the module.

Each session contains one or more **session activity** to be completed, in the workbook, where indicated in the module. These activities measure your ability to recall and apply theoretical knowledge.

At the end of each study unit a **summative assessment** needs to be completed. These assessments are longer than the session activities and will test your knowledge on all the work within the study unit.

1.3 Assessment Instructions

Keep the following in mind before doing any of the assessments:

- All assessments are to be completed in the provided workbook.
- The manual contains all relevant information you will need to complete the questions, if additional information is needed, such as the use of online sources, facilities will be made available.
- Work through the activities in a study unit and make sure that you can answer all the questions before attempting the summative assessment. If you find that you are not certain of any part of the training material, repeat that section until you feel confident.
- The summative assessment must be done under the supervision of your trainer at the end of your learning period.

Nutrition-sensitive extension

Module outcomes

At the end of this module, you will be able to:

1. Describe what a nutritious **diet** is;
2. Explain how **malnutrition** negatively impacts agriculture and society;
3. Promote agriculture practices that will improve access to healthy foods; and
4. Identify and partner with colleagues performing complementary efforts in a given area.

Module overview

Every country on the earth is affected by poor **nutrition** and the results of poor nutrition affect most families. What can agricultural extension professionals do to support better nutrition? And what might be unrealistic to expect of extension? By completing this training, you will have the opportunity to consider these questions and others and to find the right answers for the situations in which you work. This module covers the basics of a nutritious diet and the results of poor nutrition, ways that **agriculture** and nutrition impact each other, things that extensionists can change in order to improve nutrition and how to effectively partner with others working on improving the nutrition of different communities.

Diet: The food and drink that a person, group of people or animal usually eats.



Malnutrition: A condition of poor health that results from not eating enough food, from eating food without the proper nutrients, or from illnesses that prevent absorption of nutrients by the body.

Nutrition: The process of eating the right kind of food to grow properly and be healthy.



Agriculture: The science, art, or practice of cultivating the soil, producing crops and raising livestock.

Module introduction

Nutrition is the study of the basic **nutrients** needed by a person or animal to stay alive. Nutrition also involves the study of the availability of nutrients in food, the effect of cooking and storage on these nutrients and what happens when a person or animal does not get enough of the correct nutrients in their diet. Malnutrition and **undernutrition** are a very big problem worldwide. While many countries are actually producing a surplus of staple food crops (like maize or wheat), they are not producing enough of the wide variety of foods needed to provide people with a healthy diet and good nutrition. Because of this, there are many children who are sick or are dying from nutrition-related causes and many adults are less able to work and take care of their families. This has a negative impact on the agriculture and economy of a country.



Staple foods, like rice, are essential for good nutrition, but so too are diverse, nutrient-dense foods.

Good nutrition can save the lives of babies and young children, help school aged children learn better and increase the productivity of adults. Economists estimate that better nutrition could improve the gross domestic product (**GDP**) in many countries by several percentage points every year, equal to many billions of US dollars. One of the main tasks of Rural Advisory Services (**RAS**) is to support farming households in making informed production , marketing and spending decisions and they can also play an important role in making nutritious foods more available to both rural households that grow food and to households that go to markets to buy their food. Like farming households, RAS professionals also eat food and are **vulnerable** to poor nutrition. Because of the important role that food plays in protecting health and bringing us together, you should reflect on your own experience as you identify what you can do to support farmers in making decisions that will improve their health and livelihoods.



Nutrients: Substances that are needed for healthy growth, development and functioning, usually found in the food a person eats.

Undernutrition: Lack of proper nutrition, caused by not having enough food or not eating or absorbing food containing nutrients necessary for growth and health.

Vulnerable: Lacking protection, and more likely to be affected by malnutrition.

Study unit 1: What is nutrition?

Study unit outcomes

After completing this study unit, you should be able to:

- Describe ways that food affects your own life, both socially and physically;
- Explain how different foods help us stay healthy; and
- Identify ways that nutrition and agriculture depend on each other.

Study unit overview

Nutrition is not only related to what happens to nutrients in the body but also to how people can get the right types of food for good health and growth. This module will cover the basics of nutrition focusing on the macro- and micronutrients a person needs. In this module you will learn the importance of different food groups and of following food-based dietary guidelines.

Different people have different nutritional needs, and they vary throughout their lives; this module will briefly discuss these differences. Finally this module will teach you the skills to motivate people to change their diets and make healthy choices.

Study unit introduction

Food is very personal. Every person can name foods that they prefer and others that they avoid. Even people with access to healthy food and knowledge about how it affects their health often make choices that might lead to them becoming sick or not eating a nutritious diet. By reflecting on your own experiences with food, you can consider how others make food choices and what you, as an extension professional, can do to make it easier for people to make healthy food choices.

Nutrition is often associated with the health sector and people working in the agriculture sector often do not consider how it is connected to their work. Since agriculture produces food and provides household incomes, it is the foundation for nutrition. By improving your understanding of agricultural activities that can improve or worsen nutrition, you can play an important role in improving nutrition in the communities you work with.



Complete the pre-assessment in your workbook.

Session 1.1 The basics of nutrition

Session outcomes

After completing this session, you should be able to:

- Discuss the basics of a healthy diet and provide examples of combinations of foods that make up a healthy diet;
- Define micronutrients and macronutrients and describe their role in the body;
- List food groups and the nutrients associated with foods in each group; and
- Explain the role that food-based dietary guidelines and food guides play in supporting healthy diets.

Introduction

When people talk about nutrition, they often only consider what happens to nutrients inside of the body and not how people can access more nutritious food for a healthy diet. Extensionists are primarily concerned with agriculture and food production, so your efforts can impact access to nutritious foods in the communities you work in. When people do not eat foods that provide the nutrition their bodies need, they are more likely to get sick with different illnesses. The specific illnesses depend on their diets and the diseases they are exposed to. Making nutritious choices depends on a number of things. People must have knowledge about what healthy diets are and the relevant skills, such as cooking, food processing and other tasks that make food safe and nutritious. When making food choices, people need the support of their family and community and the motivation to select a healthy diet. Finally, people must have access to the right foods in order to consume healthy diets. Extension professionals can make a contribution to at least some of these factors.

Extension professionals will be more successful in contributing to nutrition when they know something about nutrition and are sensitive to the barriers to changing diets. Considering your own

diet is one way to build knowledge and to make the barriers more personal.

What does a body need?

In order for the body to function properly and to fight off infections and diseases, people need to eat a healthy diet. A healthy diet is one that meets a person's daily nutritional requirements. At the core of any healthy diet are foods that are low in unnecessary fat and sugar and that are high in macronutrients and micronutrients.

Macro- and micronutrients

Nutritionists study the components of food and their effect on health. These components are grouped into macronutrients that provide energy, which is measured in kilocalories or kilojoules, and micronutrients, or the vitamins and minerals that the body needs to function properly. All people need to balance macro- and micronutrient intake, but these nutrients are particularly important for infants and children for healthy growth and brain development. Macronutrients are needed in relatively large amounts to support normal body functions and health, whereas micronutrients are needed in relatively smaller amounts to maintain a healthy body.

Macronutrients

Macronutrients include carbohydrates, proteins and fats and oils. Carbohydrates provide energy for the body to move, breathe and perform daily activities (fetch water, cook, work in the field, tend animals, etc.). Carbohydrate-rich foods include rice, porridge, cassava and sweet potatoes.

Protein-rich foods help build muscles and repair wounds. Examples of proteins include beef, fish, cowpeas and lentils.

Fats and oils provide the body with energy, support brain function and protect organs (like the heart, liver and skin). Fats need to be

consumed in small amounts because they provide more energy than proteins and carbohydrates. Examples of fats and oils are butter, plant and vegetable oils and nuts and seeds.


Micronutrients

Vitamins support the immune system, help the body grow and break food down into energy. Many people do not consume enough vitamins, especially vitamins A and C. The following are some of the roles that Vitamins A and C play in maintaining good health and nutrition:

- Vitamin A helps with eyesight and reduces illness. Sources of Vitamin A include carrots, squash, dark leafy greens and animal liver.
- Vitamin C helps wound healing and repairs and maintains bones and teeth. Sources of Vitamin C are bell peppers, dark leafy greens, papaya and tomatoes.

Minerals support bone growth and proper nerve function and they help regulate heartbeat. The most common minerals that people do not consume enough of include iron and zinc:

Iron helps provide oxygen to cells and reduces illness. Iron can be found in red meats and animal liver, **fortified** cereals, chickpeas and lentils. Zinc helps with growth and brain development and reduces illness. Zinc is commonly found in beef, lentils, shrimp and edible seeds.

Fortified: Food that has had extra vitamins and/or minerals added. 

Dietary supplement: A product that contains one or more ingredients (such as vitamins) and that is taken to increase a person's intake of those ingredients.

Nutritionists are learning that nutrients in food work together to affect health and that a nutrient consumed by itself (e.g. an iron **supplement**) may not affect a person's nutritional status in the same way that consuming a food that contains that nutrient

would (e.g. an iron-rich serving of beef). This means that people need to eat a variety of foods in order to be well nourished and healthy. Recommendations about the variety of foods that support good health rely on food groups, like those shown in Table 1.

Table 1: Common food groups and examples of their nutritional importance

Food group	Examples	Importance
Staples	Maize, bread, tortilla, rice, porridge	Provides energy for the body to move, breathe and perform daily activities (cook, work in the fields, etc.).
Fats	Vegetable oil, butter	Provides the body with energy and protects the organs (heart, liver, skin).
Fruits	Papayas, mangoes, bananas, avocados	Helps protect the body from diseases and illnesses.
Vegetables	Pumpkins, potatoes, leafy greens, tomatoes	Helps protect the body from diseases and illnesses
Legumes	Cowpeas, kidney beans, lima beans, black beans	Helps strengthen the muscles, repairs wounds and protects against heart disease and diabetes
Meat and eggs	Chicken, beef, mutton, organ meats, eggs	Helps strengthen the muscles and repairs wounds
Dairy	Milk, yoghurt, cheese	Helps strengthen bones

Credit: Dr. Jeanette Andrade

Animal source foods, like chicken, milk and eggs, are especially important for adolescent girls, mothers and small children, who are most vulnerable to poor nutrition. Nutrients in animal source foods are more easily absorbed, and they pack a wide variety of nutrients into relatively small amounts of food.

Food-based dietary guidelines and food guides

Many countries around the world have developed food-based dietary guidelines as a tool to inform their citizens about healthy eating that reflects the foods that are locally available and culturally preferred. Dietary guidelines provide science-based recommendations about the quantity, quality and diversity of foods that ought to be consumed, depending on a person's size, activity level and factors such as pregnancy and illness that make some people require more nutrients than others.



Figure 1: A balanced meal comprises a variety of foods from each food group

Although there are differences between each country's dietary guidelines, there are also similarities. All of the published dietary guidelines recommend consuming more fruits and vegetables

and limiting foods with added sugars. They place different food items in categories based on the nutrients they are most likely to provide and the ways that these foods are eaten in that country.

Food guides are a visual representation of dietary guidelines and may accompany food-based dietary guidelines. They typically include fewer specific recommendations and are a tool that makes it easier for non-nutritionists to understand the quality, quantity and diversity of foods that contribute to a healthy diet. Figure 2 shows Benin's Food Guide, which displays five food groups in the image of a traditional round house with a thatched roof. Food groups that should be consumed in greater quantities make up the foundation of the house, while those foods that are needed in smaller quantities are shown in the smaller, higher tiers of the picture, like the roof.

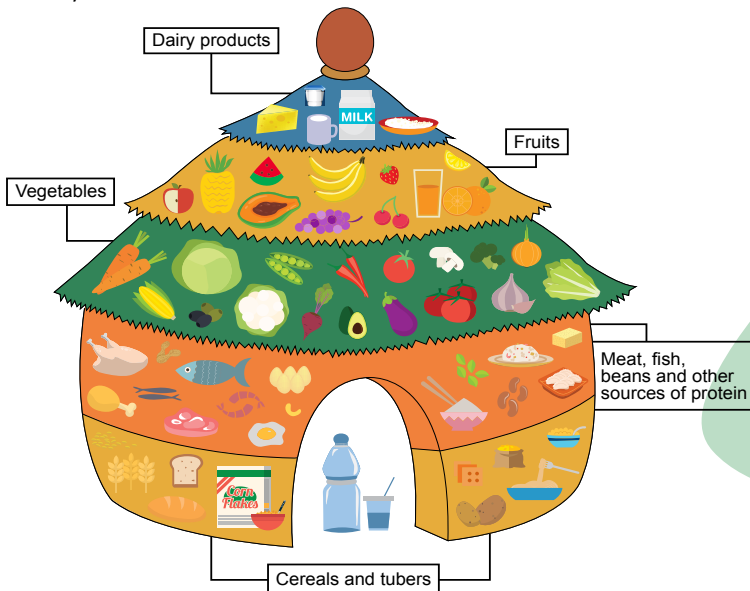


Figure 2: Benin Food Guide

(Republic of Benin (2015) Benin Food Guide. http://poledfn.org/wp-content/uploads/2014/03/guide_alimentaire_benin_legal.pdf)

Fruits, vegetables, legumes and food from animal sources are especially important for growth and good health. However, there are few places in the world where these foods are available in the amounts needed for people to have a healthy diet. These food groups also tend to be more expensive than grains and other energy-giving foods, and, in the case of fruits, vegetables and legumes, people may prefer to eat less than the amounts recommended. Later, we will discuss approaches for increasing demand for these nutritious foods. In order to increase the supply and therefore their availability, extension professionals can promote a variety of crops that include highly-nutritious foods, promote postharvest practices and technologies that reduce food losses among horticultural and livestock products and link farmers to markets in order to make the production of these foods more financially viable.



Complete Activity 1.1 in your workbook.



Complete Activity 1.2 in your workbook.

Session 1.2 Nutrition for All: Who needs what?

Session outcomes

After completing this session, you should be able to:

- Identify the physical factors that determine a person's nutritional needs;
- Define the primary forms of malnutrition; and
- Explain the factors that contribute to health and nutrition.


Introduction

People and animals at different stages of their lives have different dietary needs. For example, infants only need to consume breast milk, while adults working in the fields may need twice as much energy as adults who are not very active. Nutritional needs are determined by:

- Age;
- Body make-up and size;
- Activity level; and
- Physical state (health status, pregnancy and breastfeeding, etc.).

In many households around the world, women prepare food for their families and are the last to eat. This means that they sometimes do not meet all of their nutritional needs since they place the nutritional needs of the family above their own. Women of reproductive age (typically between 15 and 49 years of age) require extremely nutritious diets, especially when they are pregnant or breastfeeding. In pregnancy, nutrient requirements are increased not only to maintain the mother's health, but also to support health and brain development for the fetus. Nutrient requirements are even greater for a breastfeeding mother. Children aged two and younger also require extremely

nutritious diets for continued strong growth and development. Their small size means that they eat less food than adults, making it very important that caregivers provide the right kinds of foods to meet their nutritional needs.

The period including pregnancy and up to a child's second birthday is often referred to as the **1,000 most critical days**. This is the window of opportunity in which good nutrition for mothers, infants and children can set children on a path for strong growth and healthy, productive futures. 

Nutritional status

An individual's health influences their nutritional status sometimes even more strongly than the foods that they eat. This is because certain illnesses and infections prevent the body from absorbing the nutrients it needs to function well. For example, if a young child has diarrhea, their appetite will decrease and their body will be less able to absorb the nutrients in the food that they eat. If they fall sick repeatedly due to, for example, unclean water or poor sanitation, and do not have access to a nutritious diet, their growth will slow down.

This is referred to as an individual's nutritional status.

Nutritional status is the physical state of a person that is a result of the relationship between how many nutrients that individual takes in, their nutritional requirements and the body's ability to digest, absorb and use these nutrients.

Because of their increased vulnerability to poor nutrition, infants, young children and women of reproductive age are most often targeted by nutrition projects. This does not mean that men's nutrition is not important. Men also need to eat nutritious diets in order to stay healthy and work. They can also play an important role in supporting the nutrition of other family members.

Nutritional indicators

Nutritional indicators are used to assess the nutritional status of a person and usually involve measuring a person's height and weight, followed by comparing those measurements with what is normal or acceptable for their sex and age. Nutritional indicators are especially important in the case of children, since they are still growing. The most commonly used indicators that point to malnutrition are **underweight**, **wasting**, **stunting**, **overweight** and **obese**. Look at Figure 3, which shows the bodies of four different boys who are all the same age, and determine which children are malnourished.

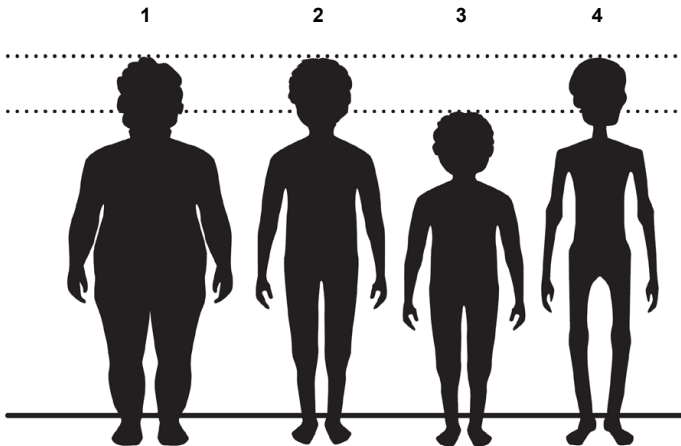


Figure 3: Malnourished children

All of the boys, except for Boy 2, are likely malnourished. Boy 2 has a normal weight and height for his age. Boy 1 is likely overweight or even obese, meaning that he is more vulnerable to Type 2 Diabetes and even heart disease at a young age. Obesity can be a result of consuming more energy than your body uses to function normally and be active and the body stores this extra energy as fat.

Boy 3 is likely stunted, meaning he is too short for his age because of **chronic** malnutrition. Stunting is difficult to reverse after a child's second birthday. Adults who were stunted as children are more susceptible to chronic diseases like diabetes and they may be less intelligent and not able to work as hard as adults whose growth was not stunted. Boy 4 is likely underweight and perhaps even wasted, a form of **acute** malnutrition due to inadequate dietary intake that requires immediate treatment.



Underweight: Weighing less than the normal amount for one's age, height and build.

Wasting: A form of acute malnutrition characterised by sudden, drastic weight loss caused by inadequate dietary intake.

Stunting: Impaired growth development caused by long term malnutrition.

Overweight: Weighing more than the normal amount for one's age, height and build.

Obese: A more severe form of overweight.

Chronic: Long term or constantly recurring.

Acute: A sudden onset or sharp rise.

Normal growth

When health professionals talk about "normal weight and height", others sometimes get confused. Any of the other children in the picture might actually be growing normally, especially if their parents are larger or smaller than average. However, when most children in a particular community are short or thin, they are probably malnourished. It is important to regularly monitor, or measure and record, a child's growth in order to determine whether their growth is normal for them. Any abnormal growth patterns should lead health professionals and the child's caretakers to consider how the child is eating and whether they are sick too often.

Micronutrient deficiencies are another form of malnutrition that are typically less visible, and are therefore sometimes called “hidden hunger”. **Micronutrient malnutrition** affects many people around the world. Under-consumption of nutrient-rich fruits and vegetables, pulses and animal source foods contributes to micronutrient malnutrition. More than half of the women and children in some countries are **anaemic**, which can be caused when diets do not contain enough iron and/or other vitamins (B₁₂ and folate), or when people have malaria or other health conditions (e.g. sickle cell anaemia).

Unfortunately, the nutrition situation in many countries is getting worse. Many low-income countries struggle with both undernutrition and increasing rates of obesity. Better diets can address both undernutrition and obesity.

Micronutrient malnutrition: A moderate to severe lack of one or more important micronutrients.



Anaemic: A person who has fewer red blood cells than normal and feels very weak and tired.



Complete Activity 1.3 in your workbook.

Session 1.3 Motivating people to make healthy choices

Session outcomes

After completing this session, you should be able to:

- Describe how difficult it can be to change diets;
- List the factors that influence people's food choices; and
- Explain how agriculture can shape social, economic and physical environments to make health food choices easier.

Introduction

The World Health Organisation recommends that each adult eat at least 400 grams of fruits and vegetables daily. How does your own diet compare? You may identify a gap between what you eat and what's recommended for good health outcomes. If you did not consume at least 400 grams of fruits and vegetables yesterday, you are not alone. Seventy four percent of the world's population does not reach this minimum threshold, and the majority of people in both high-income and low-income countries do not eat enough fruits and vegetables every day.

People who have access to healthy foods often still prefer to eat other, less-healthy foods. Food preferences are informed by our experiences, culture and personal factors such as what our family or friends eat or a dislike of specific flavors or textures. Food choices are also influenced by convenience: Is the food easy to obtain and also easy to prepare? It can be very difficult for a person to change his or her food preferences, even when information about the health benefits of certain foods are well known.

Making better food choices

There are several methods for influencing the food choices that people make that are often carried out by public health professionals. Some of the most commonly used methods are nutrition education, social and behavior change communication and social marketing. At a personal level, food choices are determined by people's food preferences and feedback related to food provided by their social networks. For example, one person might not like to eat cabbage because it is unfamiliar, because of a dislike for the flavour, or because of past experience. Another individual might prefer cabbage because it is an essential ingredient in a traditional dish and their family members would disapprove of preparing the traditional dish without cabbage.

Food choices can also be connected to how a person sees themselves and how others see them. For example, some foods might be associated with poverty or hunger, while others make a person feel like they are wealthy, well-educated or urban. Processed foods with extra sugar and fat might demonstrate that a person is rich, as opposed to traditional foods like indigenous fruits and vegetables. Unfortunately, eating too many sweet, salty, or fatty processed foods also contributes to chronic diseases like high blood pressure and diabetes.



Children need nutrient-rich foods for strong growth and development; indigenous vegetables are often rich in micronutrients.

People at risk of or already diagnosed with a disease and those people who are transitioning to a different life stage (e.g. first-time parents, school-aged children) are often more likely to make changes to their diets. People will also be more likely to change their food behaviours when they are supported by their social networks and when they have greater agency, or the ability to act independently and make their own choices. Through nutrition education, frontline health and agriculture workers can influence food choices at a personal level by working to shift food preferences. The people in the communities where you will work may have low levels of education and be unfamiliar with complicated nutritional terminology. It is important that you know your audience well and adapt your explanations to different audiences. The following tips will help you to talk to the community you work in about changing unhealthy food habits and choosing healthy foods:

- Use simple language and words that your audience will understand. Do not use complicated technical terms.
- Focus on short- term benefits of healthy eating, and short-term risks of unhealthy eating (e.g., lacking energy and focus now rather than developing chronic disease someday; or having a bright, adorable child now, not preventing stunting in the future).
 - Give only the essential information. Do not go on about nutritional information that is not useful to your audience. Extra information will not help your audience change their food choices.
 - When talking to the community, avoid lecturing. Talk to them in a natural and friendly tone.
 - Always treat people with respect, even if they choose not to change their eating habits.
 - Always check whether your audience has understood your message. Encourage them to ask questions and discuss the information you have presented them.

Messages intended to change behaviors or practices are most effective when they include a clear call to action, clearly state the benefits of the action, ask listeners to take a small, doable action, and tell them where to learn more.

For example, here's a message to farmers about proper post-harvest storage practices: When you follow good storage practices, you will have high-quality grain that is safe for your family to eat. Store dry, clean grain in hermetic bags. For more information, contact your extension agent.

What else affects food choice?

A person's food choices are influenced by a combination of the physical, **socio-cultural**, political and economic surroundings and conditions that shape a person's food preferences and choices.

Several factors that affect a person's food choices include:

- **Food availability:** Many people will only choose food that is already available in their local markets.
- **Accessibility:** Most people tend to choose food that is easy to get at a manageable distance from their home or work.
- **Affordability:** The price of food is a very important factor for food choice, especially in poor and subsistence communities.
- **Desirability:** Social and cultural backgrounds play an important role in what food a person will want to eat or not, as do people's perceptions about the health benefits of different foods.
- **Convenience:** If a certain type of food is not easy to get or difficult to prepare, most people will rather choose a convenient alternative.

Socio-cultural:



Relating to a combination of social and cultural factors.

As an extension professional, you will primarily support the production decisions and market access of smallholder farmers.

One of the ways that you can improve access to healthy food in the communities you work in is to encourage farmers to produce healthy foods. However, it is important that you consider that consumers must be motivated to eat healthy foods. Even if people are motivated to make healthier food choices, their decisions about what to grow, purchase and eat will either be supported or hindered by the food systems. Local markets provide the “pull” for farmers’ production decisions. If this “pull” does not exist, farmers will not want to plant and harvest those products as it will not be cost effective for them.

We’ll discuss how the larger food system connects food producers and consumers in Session 2.



Complete Activity 1.4 in your workbook.

Conclusion

A person’s nutritional status plays a major role in determining their health, intelligence, strength and size. A healthy diet is essential to good nutrition, but many people lack the knowledge, skills, access, or motivation to eat healthy diets. Healthy diets include a range of foods from various food groups and each food group provides the body with specific nutrients essential to good nutrition. Adults make choices related to their and their family’s nutrition every day.

These decisions are influenced by which foods are available and affordable and how desirable they are.

The recommendations that extensionists make relating to which crops to grow or what livestock or fish to raise and how to handle and market them can either make it harder or easier for people to eat healthy diets and have good nutrition.



Complete the summative assessment in your workbook.

Study unit 2: Ways that agriculture can impact nutrition

Study unit outcomes

After completing this study unit, you should be able to:

- Define a food system;
- Describe your role in the food system;
- Explain how nutrition is affected by the way a food system functions; and
- Apply basic gender analysis in your work to acknowledge and address how your actions limit or facilitate equality among men and women.

Study unit overview

As you have learned, malnutrition has negative consequences for individuals, households and society. Agriculture has the potential to support healthier diets and better nutrition. This unit will introduce the food system, which affects people's choices about the types of food to grow, consume, purchase and sell and outline the links between agriculture and nutrition. This unit will also consider how women's empowerment can build stronger pathways between agricultural livelihoods and nutrition outcomes.

Study unit introduction

Agriculture presents an important opportunity for improving nutrition and health as it is frequently the main source of livelihood in rural communities. Improved agricultural practices allow people in resource poor communities to produce, buy and eat more, better and possibly cheaper food; directly improving their health. More indirectly, improved agriculture can increase the income of people in rural areas, thus increasing ability to

purchase nutritious foods, as well as items and services that help keep households healthy (e.g. clinic visits, soap, chlorine, etc.). Reducing poverty is very important as it is one of the key contributors to poor health and malnutrition.

As agricultural extension agents, your main function is to educate communities about agricultural innovations and support them as they implement or improve their agricultural practices. In order for you to understand how your efforts will impact their lives, you have to be familiar with how the food system functions in the communities where you work. You are probably very familiar with the food system already, even if the term is new to you.

One of the most overlooked ways that agriculture can improve nutrition is through the empowerment of women. Women play a huge role in agriculture, frequently performing more than half of the labour required to produce crops or raise livestock. They are also typically responsible for preparing food within the household. In the past, extension has often provided inequitable services to men and women farmers.

Session 2.1 Understanding food systems

Session outcomes

After completing this session, you should be able to:

- Explain the concept of the food system;
- Describe the food system factors that enable people to eat healthy diets; and
- Identify ways that RAS can support good nutrition at multiple places across the food system.

Introduction

To better understand how agriculture influences nutrition, it is important to understand the food system in which individuals and households make choices about what to grow and eat. Eating a diverse, healthy diet depends on a food system where:

- Enough food is available to be collected or purchased to meet food and nutrition needs.
- Food is easily accessible, meaning that people can purchase food, fruit and vegetables in their community markets and women are not restricted from going to the market.
- The price of food is reasonable and people can afford to buy the food or the inputs needed to produce it.
- Food is safe, acceptable, and people are willing to eat and prepare it.

According to the Food and Agriculture Organization (FAO) of the United Nations, a food system is the people, institutions and processes by which agricultural products are produced, processed and brought to consumers (FAO (2013). *The State of Food and Agriculture: Food Systems for Better Nutrition*. Rome, Italy: FAO. www.fao.org/publications/sofa/2013/en/). Food systems include a wide range of activities that make sure that the food that farmers produce reaches consumers. The many different actors along the value chain, like farmers, traders,

processors, transporters, government and consumers, influence production, storage, processing, trade, marking, preparation and consumption of foods. Many diverse value chains make up food systems; for example, a local food system might include value chains for products that are traded among community members, as well as value chains that deliver products to export markets. Figure 4 shows an example of a food system and how each component relates to the others.

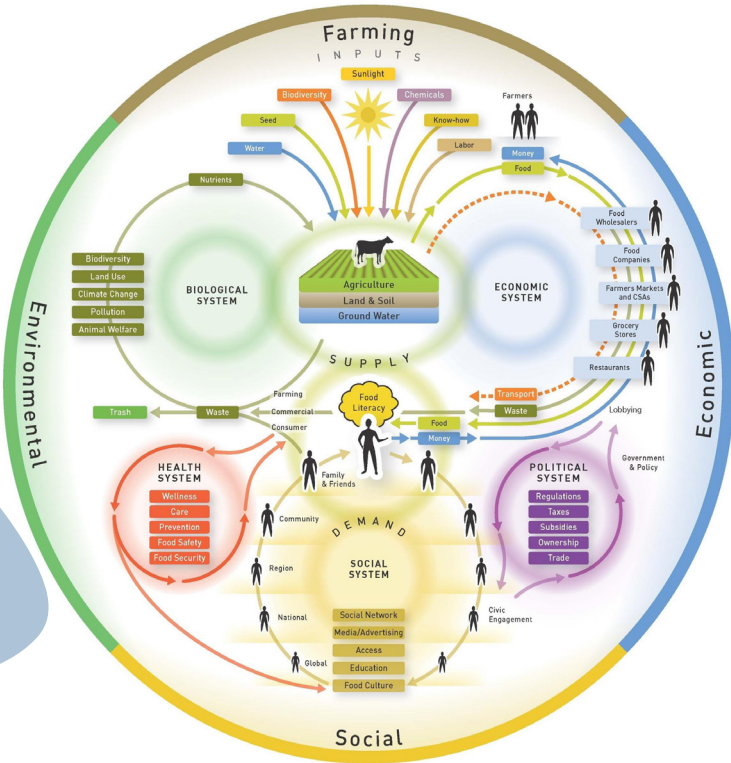


Figure 4: Food system
(www.nourishlife.org/)

Food systems

Food systems will vary significantly between societies, cultures and countries and even within one country. Before making assumptions about how you can harness agriculture for healthy diets and better nutrition, it is important to understand how the food system functions in any given location.

The FAO describes four functions of the food system (FAO (2017). Nutrition-sensitive agriculture and food systems in practice: Options for interventions. Rome, Italy: FAO. www.fao.org/3/a-i7848e.pdf):

- Food production;
- Food handling, storage and processing;
- Markets and trade; and
- Consumer demand, food preparation and preferences.

These components influence a household's choices about the food that they grow, purchase and consume. Below are explanations of the functions of food systems and some examples of how food systems could affect healthy diets and nutritional status.

Examples of the impact of food systems

Food production determines how available food is and how diverse it is. Through the use of good agricultural practices, farmers can produce safe, nutritious food while protecting natural resources.

Example 1.1: A farmer relies solely on maize production, planting maize in the same field year after year. This practice has led to poor soil fertility and crop productivity. With fewer staple foods available for home consumption, the farmer's family has low energy intake. This insufficient energy intake has led to wasting in the farmer's young child and his pregnant wife is underweight.



Example 1.2: Another farmer grows maize intercropped with legumes, rotating the crops grown on his fields after each season and practicing minimum tillage. The soil in his fields is rich in organic matter and his fields produce enough food to feed his family, even in seasons with poor rainfall. The farmer also keeps goats, which the family relies on for milk and income. The quality staple crops and fresh milk, combined with fruits and vegetables purchased with the income from livestock sales, has helped the family maintain good nutritional status.



Food handling, storage and processing helps to preserve the quality of food and limit food losses, supporting stable food supply and prices. Proper handling, storage and processing techniques can affect the shelf-life, safety, nutrient content and taste of foods.

Example 2.1: After harvesting leafy green vegetables grown in her home garden, a farmer dries them in a clean area of her homestead. By preserving nutrient-rich vegetables, she is ensuring that nutritious foods are available for her household throughout the year.



Example 2.2: Unfortunately, the same farmer did not properly dry the groundnuts she produced before storing them, leading to food contamination. Eating these contaminated groundnuts has caused the children to get diarrhea. As they are now sick, the children are at higher risk of wasting and stunting because their bodies cannot effectively use the nutrients available in the foods.



Markets and trade within countries and across borders take products from the farm to the consumer, making diverse food more accessible.

Example 3: Roads leading to rural communities are poor; trucks are unable to collect fruits and vegetables for markets before they spoil. Farmers do not realise the potential income from these more sensitive food products. The loss of income diminishes their ability to purchase other agriculture, food or healthcare products. Poor availability of fruits and vegetables, due to spoilage, also possibly leads to higher food prices; some families are unable to purchase these nutrient-rich foods.



Consumer demand, food preparation and preferences drive decisions on the foods that are produced, processed and traded in markets. People's ability to purchase food and their food preferences, sometimes based on cultural beliefs and gender norms, will drive demand.

Example 4.1: A household believes that men and young boys should eat first, leading to unequal food allocation within the household. The father and sons often receive the best meat and vegetables, while the mother and daughter eat what remains. The mother is underweight and her daughter is stunted.



Example 4.2: In another household, a young mother has participated in cooking demonstrations hosted by a community health worker. She has learned how to make nutritious meals for her young daughter using locally-available harvested and gathered foods. Before preparing foods, she carefully washes her hands with clean water and soap. Her daughter is free from illnesses and shows normal growth when the mother takes her to growth monitoring sessions.



Because food systems determine the availability, accessibility, affordability and desirability of foods, they directly affect diet quality or the diversity, quantity and safety of the foods people eat. The quality of a person's diet affects their nutritional status.



Complete Activity 2.1 in your workbook.

Session 2.2 Pathways between agriculture and nutrition

Session outcomes

After completing this session, you should be able to:

- Describe the various pathways that lead from agriculture to improved nutrition
- Explain how improving **gender** equality can empower women;
- Describe how the roles traditionally filled by women can affect household nutrition; and
- Identify how men and women might be impacted differently by an agricultural practice or technology and propose solutions that meet the needs of men and women farmers.

Introduction

Agriculture-nutrition pathways visually represent how agriculture can impact nutrition. The pathways can help program planners develop projects that will result in improved nutrition, and to monitor and evaluate change. Three impact pathways have been identified and are illustrated in Figure 5.

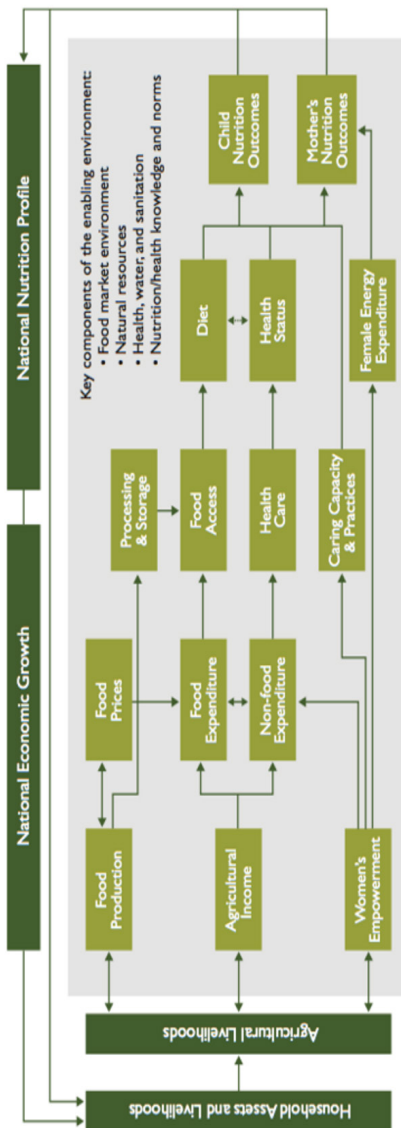


Figure 5: Agriculture-nutrition pathways

(Herforth & Harris (2014) Understanding and Applying Primary Pathways and Principles. Brief #1. Improving Nutrition through Agriculture Technical Brief Series. SPRING Project. www.spring-nutrition.org/sites/default/files/publications/briefs/spring_understandingpathways_brief_1_0.pdf)

These pathways help us think about how the actions of extensionists can affect nutrition . We have addressed two pathways in the discussion of food systems:

- The food production pathway can drive consumption, incomes and local food availability. Food production affects the diversity and quantity of food available to farming households to eat and also influences food prices at local markets.
- Agricultural income can be used for food and non-food purchases. Reliable and sustainable incomes can help rural households buy more nutritious and stable diets and other goods and services, like health care, education or clean water, that support them to have healthier lives.

Women's empowerment is a meaningful way to improve nutritional status through agricultural livelihoods. Extensionists can support women's empowerment by providing advisory services that meet the specific needs of men and women farmers.

Women who are empowered have:

- more decision-making power;
- better access to, and control over, resources; and
- more control over time and labour allocation.

Women's role in nutrition

Women traditionally play a central role in household care and nutrition. Evidence from many countries around the world shows that empowered women typically have better nutrition themselves and their children and households tend to be better nourished. This is because women, more so than men, often use more of their cash income for nutritious foods, healthcare needs and other household expenditures. When women are able to make decisions about income and food, the whole family will likely benefit. Men can also play an important role in nutrition – and are often more willing to include women in decision-making and to help with childcare than we may assume. When men and women in a household make decisions together about agricultural production, labour and income, **gender equality** and household nutrition greatly improve.

Extensionists must be sensitive to the roles of women within households and communities. Women are not only engaged in productive activities, including agricultural production, harvesting and processing, but also activities that contribute to the family's growth, health and nutrition. Empowering women through the production and sale of cash crops, dairy products or small livestock at local markets can, for example, increase incomes, but may also contribute to greater burdens on a woman's labour and time. This, in turn, affects her own health and her ability to feed and care for children and family. Reducing women's time and labour burden, particularly during pregnancy and breastfeeding, and increasing male support for women's roles within the household has a positive influence on the nutritional status of the household.

To improve nutrition by increasing women's participation in agricultural activities, you need to have a strong understanding of the existing gender roles and social norms in the communities you work in. You will need to respectfully consider what is currently acceptable in communities when it comes to the roles of women in and outside the home and what influence these women may or may not have on the wider community.

Men and women, young and old, play vital roles in rural livelihoods, but assumptions are often made about who does what and who makes decisions. Understanding these gendered roles is critical to targeting efforts and helping everyone involved in rural livelihoods and agriculture benefit from innovations and improved technologies. By appreciating different community members' extension needs, you can better match approaches and technologies to them. Applying a "gender lens" to your work with rural communities will help you engage clients in new and better ways for more responsive service delivery . If you would like more information on the role that gender plays in agriculture and rural life, please see Module 12 of the New Extensionist Learning Kit.



Gender: The way women and men, boys and girls are expected act that will vary from culture to culture and often change over time.

Gender equality: Fairness in representation, participation and benefits afforded to men and women.

Gender lens: A tool used to identify problems and obtain information related to gender.

Gender roles: How your society defines tasks, responsibilities, and behaviours considered appropriate for men and women. These depend on context and can also change over time.



Complete Activity 2.2 in your workbook.

Conclusions

There are three important ways that agriculture can impact nutrition. Food production is the main pathway through which many vulnerable households consume nutrients and ensure food security. Agriculture can offer a reliable and sustainable source of income for rural households for food and non-food purchases creating an important pathway to better nutrition. Women's empowerment is a frequently overlooked pathway to increased health and nutrition. These pathways are not a straight line from food production to healthy diets and better nutrition. The pathways often cross lines and interact with and are influenced by the greater food system. Extension agents need to be familiar with all these pathways, and the food system of the community they work in, if they are to have a real impact on the nutrition of their community.



Complete the summative assessment in your workbook.

Study unit 3: Actions that extensionists can take to improve nutrition

Study unit outcomes

After completing this study unit, you should be able to:

- Describe the various actions that RAS can take to improve nutrition;
- Carry out appropriate nutrition-sensitive actions in the situation where you work; and
- Identify agricultural activities that can make nutrition worse and find alternatives.

Study unit overview

You have learned how food affects nutrition and health and how agriculture is connected to nutrition. Now you will consider specific actions that you can take that can contribute to more nutritious food systems.

Study unit introduction

As an agricultural professional, you are familiar with the variety of challenges faced by various farmers. For example, while two farmers may grow the same crops and have the same livestock, one might have better soil fertility, while the other might be better at budgeting and planning ahead. In the same way, the actions that you can take to improve nutrition will depend on the local nutrition situation, **agroecological** factors, the way that local markets operate and your responsibilities.



Agroecology:

The application of ecological processes to agricultural production systems, including a consideration of the local ecosystem in which agricultural activities take place.

Session 3.1 Nutrition-sensitive rural advisory services


Session outcomes

After completing this session, you should be able to:

- Describe the various actions that extension agents can take to promote nutrition-sensitive agriculture.

Introduction

Nutrition-sensitive agriculture seeks to maximise agriculture's contribution to nutrition (FAO (2014) Improving Diets through Nutrition-Sensitive Agriculture www.fao.org/about/meetings/icn2/news-archive/news-detail/en/c/261494/). It focuses on the production and consumption of nutritious foods such as **biofortified** crops, foods from animals, fruits, vegetables and legumes and entails targeting poor households, promoting gender equality, and providing nutrition education so that household resources are used to improve household members' nutrition, especially that of women and young children.

Biofortified crops: Crops that have been intentionally bred to increase their nutritional value. 

Nutrition-sensitive agriculture: An approach that seeks to maximise agriculture's contribution to nutrition by focusing on the production of nutritious foods, and entails targeting poor households, promoting gender equality, and providing nutrition education so that household resources are used to improve household members' nutrition, especially that of women and young children.

Nutrition-sensitive agriculture focuses on the production of a variety of affordable, nutritious, culturally appropriate and safe

foods in enough quantities and quality to meet the nutritional needs of a community in a sustainable manner. This session will look at how extension professionals can promote nutrition-sensitive agriculture.

Nutrition-sensitive actions

An action is 'nutrition-sensitive' when it is intended to improve the underlying causes of poor nutrition. One helpful way to consider if an agricultural practice is nutrition-sensitive is to ask the following questions:

- Does the action increase availability of, and access to, diverse food?
- Does the action increase households' resources for accessing nutritious foods, and goods and services that support their health?

If you can answer "yes" to one – or even better! – both of these questions, the agricultural practice likely supports healthier diets and good nutrition.

The following are some examples of nutrition-sensitive actions that relate to typical RAS duties. As an extensionist, you can aim to:

1. Increase production of more diverse and nutritious foods that people do not eat enough of and that address local nutrient deficiencies. These foods typically include:
 - Biofortified crops like orange-fleshed sweet potato and iron-rich beans;
 - Animal husbandry for milk, eggs and meat; and
 - Fruits, vegetables and legumes.
 - By supporting farmers and other value chain actors to produce more of these foods, they will become more available.
2. Promote safe processing, preservation and storage practices and technologies both on the farm and across the value chain in order to preserve nutritional value, extend the availability of seasonal foods, reduce food losses and improve food safety.

3. Protect natural resources through good agricultural practices by adopting production systems that restore biodiversity and grow soil nutrients. Healthy soil produces more food with higher levels of micronutrients. Efficient water management, such as drip irrigation, can reduce **vector-borne illnesses**, like malaria.
4. Promote clean environments through good sanitation and hygiene practices, particularly related to handling manure, pesticides and fertilisers. These actions keep people free from infection so that their bodies can absorb the nutrients in their food. They also ensure that natural resources will be available for crops in future years.
5. Provide engaging nutrition education to encourage people to grow and eat healthy foods. This could include recommendations for selecting nutritious crops, improving recipes with locally-available foods or limiting consumption of extra fats, sugars and salt.
6. Expand markets for nutritious foods and market access for vulnerable groups. This might include helping farmers access seeds, pest management approaches, improved livestock breeds and market price information.
7. Work across the value chain to increase the demand for and supply of healthy foods and to improve the nutritional value of food. Encourage input dealers, agricultural technology salespeople, food processors, wholesale buyers, etc. to broaden their offerings to support diverse foods and to meet the needs of men and women farmers, which can also improve their sales.
8. Recognise and support the different needs and barriers faced by men and women farmers. Empower women in agriculture by ensuring their access to income opportunities, social networks and financial services. Be attentive to how new

activities might affect men's and women's existing responsibilities. Arrange meetings at times that do not conflict with other tasks and provide support for child care as needed. Engage men to reduce time and labor burdens on women and encourage men and women to share decisions about agriculture, income and expenditures.

Vector-borne illnesses: Illnesses and diseases that are spread between humans or from animals to humans by bloodsucking insects like mosquitoes, ticks, flies, etc.



Complete Activity 3.1 in your workbook.



Complete Activity 3.2 in your workbook.

Conclusion

Nutrition-sensitive agriculture and extension services play an important role in the improvement of the health of people and the production of diverse, safe and nutrient-rich food. Nutrition-sensitive agriculture and extension actions should focus on diversification and sustainable intensification of agricultural production, post-harvest handling, storage and processing, nutrition education, and behaviour change communication, as well as women's empowerment and gender equality.



Complete the summative assessment in your workbook.

Study unit 4: Establishing partnerships across sectors for better nutrition

Study unit outcomes

After completing this study unit, you should be able to:

- Discuss how extensionists' contribution to nutrition complements the work others are doing to improve health and nutrition; and
- Negotiate with partners working in your community in order to join forces to improve rural households' nutrition.

Study unit overview

Many different organisations interact with rural communities. This study unit will discuss the importance of forming partnerships and collaborations with different organisations in your area as well as the problems faced when forming partnership. In this study unit you will also learn basic negotiation skills and how to commit to action.

Study unit introduction

Besides extension services, many other organisations interact with rural and resource poor communities. These groups include governmental, non-governmental and civil society organisations, financial institutions, government officials and business people. Most of these groups are interested in improving the lives of the people in the community, however, some of these groups use these communities as a platform to get things they want or are mandated by certain policies to work in poor communities. In addition to these organisations, there are also the people and groups associated with the food system of the local community. One of the most

effective ways agricultural extension can improve the health and livelihoods of people in a community is to communicate and work together with all the different role players in that community.

Session 4.1 Partnerships and collaborations

Session outcomes

After completing this session, you should be able to:

- Describe how effective partnerships will help extension professionals do their work better; and
- Discuss how these partnerships will help the community members meet more of their nutritional needs.

Introduction

In addition to extension professionals, many different groups employ frontline workers or individuals that work directly with farming households. The field of nutrition can become extremely technical and this training module has covered the basic aspects of nutrition that are most relevant to agricultural advisory services. You would not expect a medical doctor to be able to advise farmers on fertiliser applications. Since extension professionals are responsible for technical information related to agriculture, it is likely not appropriate to expect you to become a nutrition expert.

How, then, can you effectively partner with other sectors that are committed to improving nutrition? Consider the types of groups that interact with households similar to those reached by extensionists. Different organisations often interact with distinct individuals within the household. For example, a health-focused organisation may work with women of reproductive age, a schoolteacher might reach children and an extensionist may relate primarily with mature men and women.

By forming partnerships and collaborations, developing your negotiations skills and committing to action, you will be able to

effectively work with other actors to achieve nutrition security in the communities you serve.

Partnerships and collaborations

When the actions of each sector are coordinated, they can have more impact than when partners are not familiar with each other's work. For example, in Zambia, a multi-sectoral project called Realigning Agriculture to Improve Nutrition (**RAIN**) facilitated formation of the Mumbwa District Nutrition Coordinating Committee (**DNCC**) that coordinates district-level representatives from four government ministries as well as civil society stakeholders. The DNCC brought these partners together on a regular basis so that they established relationships and familiarity with each other's work. This led to better coordination of their actions to improve nutrition. The DNCC is one of many examples that describe multi-sectoral collaboration for nutrition.

Although this type of collaboration can help professionals use their time and resources more effectively, there are several common challenges to making coordination happen. It can be hard to find time to meet with partners, especially when coordination isn't part of your assigned duties. Sometimes the words used by one sector to describe problems and solutions are unfamiliar to people from another sector, even though the concepts might not be new. **Acronyms** in particular can make communication more difficult when they are not understood by all partners. Supervisors must support their staff in developing cross-sectoral partnerships. The most effective coordination mechanisms often benefit from the support of paid staff, but in many cases there is no staff support for coordinating activities. But even without a paid coordinator, you can take small steps to get to know who else is working in your community and how their work might complement yours.



Acronym: An abbreviation formed from the first letters of other words and pronounced as a word.

Successful negotiation skills for effective collaboration



It is important for you to work with these various entities so that community members can benefit from everyone's interventions but not be overwhelmed by them. Effective collaborations also allow you to focus on your job without having to do tasks that another group is better able to do. No doubt you have good relationships with many of these groups, but you may also have a difficult relationship with a group, where conflict interferes with your efforts to work together to improve nutrition in a community.

Effective negotiation skills can improve both good and bad relationships. Negotiating requires that you clearly communicate your needs to partners and potential partners. By focusing on your needs and listening respectfully to others' needs, you establish the basis for a fruitful partnership.

These negotiation principles can also be used to build constructive communication skills and mutually respectful relationships within farming households, thus creating the conditions for improved health and nutrition. Applying these negotiation principles toward women's empowerment can help advance the role of women as decision-makers in the household who are able to engage on more equal terms.

Table 3 shows the basics of negotiation.

Table 3: Basics of negotiation

 <p>The first picture demonstrates the need to clearly state what you need and what you feel the communities need. This is your opportunity to talk frankly to a potential partner or someone you are obligated to cooperate with about what you see the main issues to be and how you want to deal with them. This</p>	 <p>The second picture demonstrates the need to listen to and understand the needs of the potential partner or collaborator. Use the listening period to ask probing questions and seek to understand their position. Use what you know about them to anticipate questions you might ask. This step requires</p>
<p>step requires you to go into a meeting with clarity on what you want and need and what you are seeking in terms of an outcome. Prepare to speak openly and clearly about your needs.</p>	<p>you to go into a meeting with good questions focused on the needs of the community and what a potential partnership will mean for community members. Prepare to engage openly and ask questions to understand.</p>



The third picture raises an important point that is often neglected when we get into discussions. The hand motions here represent **repetition**. In this case it means taking what you have heard from them and returning to your needs. It does not mean that you mechanically repeat what you said before but that you stay closely focused on your needs and the needs of communities and NOT get sidetracked. Prepare to stick carefully to your needs and not get drawn into a debate on other issues.



The fourth and final picture shows clasped hands indicating **agreement** has been reached. It is important not to be impatient to arrive at this point. Finalise the agreement only when you are sure it will enable you and the communities to get what they really need. The clasping hands might imply that some written agreement can be drawn up describing roles and responsibilities. Don't hesitate to request this. Prepare to continue the discussions if you don't get what you need.

Think about the multiple organisations working alongside you in your intervention communities. Which are promising potential collaborators for improving nutrition? Which organisations do you have existing relationships with? How would you describe your relationships (e.g. good collaboration, little collaboration, tense or difficult relationship, no relationship at this time)? For those you would like to collaborate with, think about what they want or need and what you want and need in a potential collaboration.

Committing to action

This module has addressed many different ways that extension professionals can contribute to better nutrition, both in the communities that you work in and beyond, as the food that farmers produce reaches urban and maybe even international markets. This might be a lot of new information. As an extension professional, you have learned how to support farmers to take steps to adopt new technologies and practices. How will you be able to act on some of the information and skills that you have acquired while working through this training?

Sometimes having a lot of information can be overwhelming and make you feel like you do not know where to start. One way to take action on new information is to identify two or three things that you know you can do. To support yourself in identifying and carrying out the first steps you can take to improve nutrition, consider what you are already doing at the community level and answer the following questions:

- Which of your current activities already contributes to nutrition?
- Which activities could be shifted slightly so that they contribute more to nutrition?
- Are there activities that may be impeding nutrition?



Complete Activity 4.1 in your workbook.



Complete Activity 4.2 in your workbook.



Complete Activity 4.3 in your workbook.

Conclusion

There will always be many different people, groups and organisations working in a local community. By working together, these different individual entities can draw on each other's skills and strengths. Almost every country in the world is suffering from some form of malnutrition and food systems worldwide are facing many challenges. Agricultural extension services should realise that through creating innovative and meaningful partnerships they will be able to improve the lives of rural people and advance good nutrition and health.



Complete the summative assessment in your workbook.



Complete the post-assessment in your workbook.

Glossary

Definitions

Word	Definition
Acronym	An abbreviation formed from the first letters of other words and pronounced as a word.
Acute	A sudden onset or sharp rise.
Agriculture	The science, art, or practice of cultivating the soil, producing crops and raising livestock.
Agroecology	The study of ecological processes applied to agricultural production systems.
Biofortified crops	Crops that have been intentionally bred to increase their nutritional value.
Chronic	Long term or constantly recurring.
Diet	The food and drink that a person, group of people or animal usually eats.
Fortified	Food that has had extra vitamins and/or minerals added.
Gender	The way women and men, boys and girls are expected act that will vary from culture to culture and can change over time.
Gender equality	Fairness in representation, participation and benefits afforded to men and women.
Gender lens	A tool used to identify problems and obtain information related to gender.

Word	Definition
Gender roles	How your society defines tasks, responsibilities, and behaviours considered appropriate for men and women. These depend on context and can also change over time.
Malnutrition	A condition of poor health that results from not eating enough food, from eating food without the proper nutrients, or from illnesses that prevent absorption of nutrients by the body.
Micronutrient malnutrition	A moderate to severe lack of one or more important micronutrients.
Nutrients	Substances that are needed for healthy growth, development and functioning, usually found in the food a person eats.
Nutrition	The process of eating the right kind of food to grow properly and be healthy.
Obese	A more severe form of overweight.
Overweight	Weighing more than the normal amount for one's age, height and build.
Socio-cultural	Relating to a combination of social and cultural factors
Stunting	Reduced growth rates and physical development caused by long term malnutrition.
Supplement	When something is added to something else in order to complete or enhance it.

Word	Definition
Underweight	Weighing less than the normal amount for one's age, height and build.
Undernutrition	Lack of proper nutrition, caused by not having enough food or not eating enough food containing nutrients necessary for growth and health.
Value chain	A set of connected activities that work together to add value to a product, while linking buyers, sellers and markets.
Vector-borne illnesses	Illnesses and diseases that are spread between humans or from animals to humans by bloodsucking insects like mosquitoes, ticks, flies, etc.
Vulnerable	Lacking protection, and more likely to be affected by malnutrition.
Wasting	A form of acute malnutrition characterised by sudden, drastic weight loss caused by inadequate dietary intake.

Abbreviations

Abbreviation	Description
DNCC	Mumbwa District Nutrition Coordinating Committee
GDP	Gross Domestic Product
RAIN	Realigning Agriculture to Improve Nutrition
RAS	Rural Advisory Services

Resources

The following resources were used in writing this manual.

- Republique du Benin, available at: http://poledfn.org/wp-content/uploads/2014/03/guide_alimentaire_benin_legal.pdf
- Smolin L, Grosvenor M. Nutrition Science and Applications, 4th ed. John Wiley & Sons Inc., 2016.
- FAO E-learning course (2016), 'Improving Nutrition through Agriculture and Food Systems', www.fao.org/elearning/#/elc/en/Course/NFS
- Merriam-Webster Online Dictionary, www.merriam-webster.com/
- NELK Module 10
- NELK Module 12
- Nourish Food System Map, www.nourishlife.org/pdf/Nourish_Food_System_Map_8.5x11.pdf
- The Horticulture Innovation Lab, <http://horticulture.ucdavis.edu>
- The MALIS project implemented by FAO, www.fao.org/nutrition/education/iycf/iycfprojectincambodia/en/
- IFAD initiative, www.ifad.org/documents/10180/32a84d58-3aa6-4379-a345-e816b2d5bf70
 - ACDI/VOCA, www.acdivoca.org/projects/production-finance-and-improved-technology-plus-profit
 - World Food Programme's Home Grown School Meals initiative, www1.wfp.org/home-grown-school-meals
 - Helen Keller International, Nurturing Connections – Adapted for Homestead Food Production and Nutrition www.fsnnetwork.org/sites/default/files/TOPS_Nurturing%20Connections_English_FINAL_P.pdf
 - UNSCN (2013) Key Recommendations for Improving Nutrition through Agriculture and Food Systems. http://unscn.org/files/Agriculture-Nutrition-CoP/Agriculture-Nutrition_Key_recommendations.pdf
 - FAO Food-based dietary guidelines: www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en/

Other modules of the New Extensionist modules are:

1. Introduction to the New Extensionist
2. Extension Methods and Tools
3. Extension Programme Management
4. Professional Ethics
5. Adult Education for Behavioural Change
6. Knowledge Management for RAS
7. Introduction to Facilitation for Development
8. Community Mobilisation
9. Farmer Organisational Development
10. Value Chain Extension
11. Agricultural Entrepreneurship
12. Gender in Extension and Advisory Services
13. Risk Mitigation and Adaptation

Other related modules developed by GFRAS are on:

- Evaluation of Extension Programmes
- Policy Advocacy for RAS
- **Nutrition**

Global Forum for Rural Advisory Services (GFRAS) is about enhancing the performance of advisory services so that they can better serve farm families and rural producers, thus contributing to improved livelihoods in rural areas and the sustainable reduction of hunger and poverty. Rural advisory services help to empower farmers and better integrate them in systems of agricultural innovation.