UGRC 145: FOOD AND NUTRITION IN EVERYDAY LIFE

Session 6 – **FOOD RESOURCES**

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Food Resources

Session Overview

Learning Objectives:

At the end of this lecture you should be able to:

- **List food sources for Ghana**
- **List the Ghanaian six food groups**
- **Describe the food groups and their major nutrients**
- **Explain why one must eat from all the food groups**
- **Clarify implication s of food diversity and nutritional status.**

Session Outline

The key topics to be covered in the session are as follows:

- Topic One: FOOD RESOURCE
- Topic Two: New classification of the food groups
- Topic Three: Assignment/Discussion For Next Session

Topic One

FOOD RESOURCE

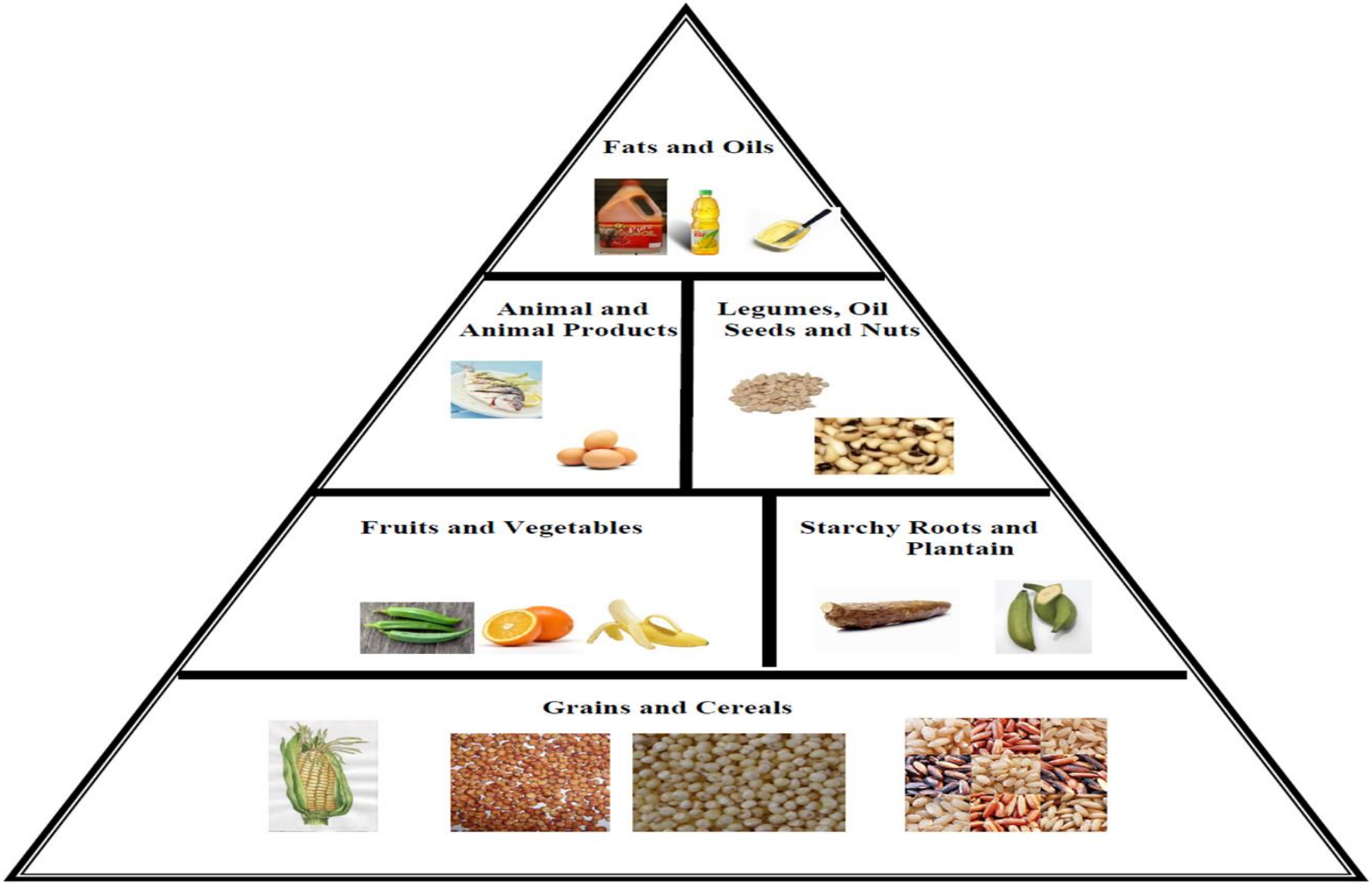
What is food Resource?

- Food resource simply means all food supplies available to the population and a country at large

Food may be sourced from

- **Plants:** cereals, fruits, vegetables, roots and tubers
- **Animals:** eggs, all types of meat from any animals, milk and all types of fish and sea foods
- **Other categories:** such as fungus (mushroom) or fermented products (alcohol)

THE GHANAIAN SIX FOOD GROUPS



1. Cereals

- Examples maize, sorghum, millets and rice.
- Cereal of considerable interest is wheat. Used in breads, dough-nut, cakes and pies.
- Generally cereal grains have a fairly similar nutritive value.
- For a balanced diet, cereals should be eaten with foods rich in protein, minerals and vitamins. Processing affect nutrient content.

Table 1. Some nutrients composition in 100 g of selected cereals

Food	Energy (kcal)	Protein (g)	Fat (g)	Calcium (mg)	Iron (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)
Maize flour, whole	353	9.3	3.8	10	2.5	0.30	0.10	1.8
Maize flour, refined	368	9.4	1.0	3	1.3	0.26	0.08	1.0
Rice, polished	361	6.5	1.0	4	0.5	0.08	0.02	1.5
Rice, parboiled	364	6.7	1.0	7	1.2	0.20	0.08	2.6
Wheat, whole	323	12.6	1.8	36	4.0	0.30	0.07	5.0
Wheat flour, white	341	9.4	1.3	15	1.5	0.10	0.03	0.7
Millet	341	10.4	4.0	22	3.0	0.30	0.22	1.7
Sorghum	345	10.7	3.2	26	4.5	0.34	0.15	3.3

2. Starchy roots and tubers

- Examples cassava, sweet potatoes, cocoyam, yams and plantains.
- Relatively easy to cultivate and give high yields per hectare.
- Contain large quantities of starch hence fairly easy source of energy.
- Relatively cheaper than the cereal class of foods and as such most Ghanaian rely on it as their major bulk of their food.

Starchy roots and tubers

- They are inferior to cereals because
  - They consist of about two-thirds (2/3) water
  - Have much less protein, as well as lower contents of minerals and vitamins.
    - They usually contain less than 2% protein, whereas cereals contain about 10%. Yams, however, contain up to 6% good-quality protein and some Vitamin C.

3. Fruits and vegetables

- Eaten mainly because of their high vitamin C content.
- The coloured fruits also contain useful quantities of carotene (converted to Vitamin A in the body when eaten).
- Their main macronutrient content is carbohydrate which is present in the form of **various sugars** and a lot of **fibre.**

Fruits

Examples oranges, mangoes and pineapples

Citrus fruits such as oranges, lemons, grapefruits, tangerines and limes contain good quantities of vitamin C but little carotene.

Pawpaw, mango and water melon contain both carotene and vitamin C.

Bananas are especially rich in potassium which is good for lowering blood pressure.

Vegetables

- Vegetables in addition to vitamin C contain significant amounts of calcium, iron and other minerals.
- They are also high in fibre which adds bulk to the diet.
- Dark green leaves e.g. kontomire, cassava leaves, *ademe*, are the most valuable.
  - They contain far more carotene and vitamin C, as well as more protein, calcium and iron, than pale green leaves and other vegetables. Thus the local greens are superior to cabbage.

Benefits of vegetable consumption

- Increase in consumption of green leaves and other vegetables could play a major part in reducing vitamin A deficiency, often prevalent in children.
- They could contribute to lessening the prevalence of iron deficiency anaemia in all segments of the population especially in women of child-bearing age.
- Increased vegetable consumption would also supply additional calcium and vitamin C.

Benefits of vegetable consumption

- High fibre content of fruits and vegetables help prevent constipation, aid in weight control and protect against cancers of the colon and rectum.
- They also contain some substances such as lycopene found in for example tomatoes, and other phytochemicals which are all protective against cancer

Causes of loss of nutrients in vegetables

- Sun drying of vegetables leads to loss of **vitamin A and C.**

- The **vitamin C** content of vegetables is also lowered by prolonged cooking.

4.Animal and Animal Products

- Examples are meat, fish, eggs and products made from them such as sausages.
- They provide good quality protein than those from plant sources
- They are also rich in other nutrients such as minerals, and fats.
    - E.g. the iron provided by meat and fish is easily absorbed and enhances the absorption of iron from common plant foods such as beans.
- They are usually more expensive too

Animal and Animal Products

- Consumption of large quantities of animal source foods (meat and meat products) leads to an increase in **intake of fat**, especially saturated fat.

- This practice increases the risks of **heart disease** and **obesity**.

Animal and Animal Products

- Fish is more healthy.
  - Fish liver and fish oils are very rich sources of the fat-soluble vitamins A and D.
  - Fish oils contain special fat known as **omega-3** which is protective against heart and blood vessels diseases.
  - Small fish from the sea and lakes such as sardines and sprats **(Keta school boys)** when consumed whole, bones and all provide much calcium.

Animal and Animal Products

- Eggs are highly nutritious, easily prepared, easily digestible, protein-rich food suitable for children from the age of six months onward.

- Eggs however contain very high levels of cholesterol (usually present in the yolk).
  - Cholesterol although essential in the body, has been noted to be a contributory factor to heart and blood vessels diseases when in excess of body needs

Animal and Animal Products

- Milk and milk products do not feature as Ghanaian foods since the quantities consumed are not significant nutritionally.
  - Milk is usually added to tea or any beverage for taste and colour. The small ideal milk tin which should be shared by two people for it to count towards nutrient intake usually shared by about six persons.

5.Legumes, oil seeds and nuts

- Examples beans, groundnuts, cashew and melon seeds (agushie and neri).
- Legumes contain good quantities of protein and B vitamins in addition to carbohydrate.
- Legumes such as groundnuts and soybeans are rich in oil. They usually supplement the carbohydrate based diets (cereals, starchy roots and tubers).

Legumes, oil seeds and nuts

- Most legumes contain more protein than meat, but the protein is of slightly lower quality because they contain small amounts **methionine** an essential amino acid.

- However, when legumes and cereals are eaten together at one meal they supply a protein mixture containing good quantities of all the amino acids, which improves the protein value of the diet.

- Also dried legumes allowed to sprout before eating have good quantities of vitamin C.

Legumes, oil seeds and nuts

- Most legume seeds usually contain
  - About 22% protein (as opposed to 1% in cassava roots and 10% in maize)
  - Good quantities of thiamine (vitamin B_1), riboflavin (vitamin B_2) and niacin;
  - In addition they are richer in iron and calcium than most of the cereals.

Legumes, oil seeds and nuts

- Groundnuts contain much more fat than other legumes, often 45%, and also much more niacin (18 mg per 100 g) and thiamine, but relatively little carbohydrate (12%).

- The protein content (27%) is a little higher than that of most other pulses.

Legumes, oil seeds and nuts

- Groundnuts are an unusually nutritious food with more protein than animal meat. However, the protein is from plant source which is lower in quality than that from animal source.

- They are energy dense because of their oil, and they are rich in vitamins and minerals.
  - If every child, woman and man in Africa ate a handful of groundnuts per day in addition to their normal diet, Africa would be rid of most existing malnutrition.

Legumes, oil seeds and nuts

- Cashew nuts are rich in fat (45%) and contain 20% protein and 26% carbohydrate. Cashew nuts are a useful local food but too expensive for most people.

- The melon seeds also add a great amount of variety, taste, oil and protein to the foods.

6.Fats and oils

- Fats are usually solid at room temperature while oils are liquid. This property has to do with the level of saturated fatty acids in the fatty acid chain.

- Fats contain a variety of fatty acids. Fats derived from land animals (e.g. butter and lard) usually contain a high proportion of saturated fatty acids and hence solid at room temperature.

Fats and oils

- In Ghana most of the fats and oils commonly eaten are from plant sources
    - margarine, shea butter, coconut oil, groundnut oil and palm oil.

- Fats derived from plant products (groundnut) and marine animals (cod-liver oils) contain more unsaturated fatty acids.

Fats and oils

- Some plant sources contain both saturated and unsaturated fatty acids.
  - E.g. palm oil contains a higher proportion of saturated fatty acid and that explains why even in our warm temperatures palm oil is still solid.

- A high intake of saturated fatty acids may contribute to raise blood cholesterol levels, which in turn may increase the risk of coronary heart disease.

Fats and oils

- The fat consumed in human diets is often divided into two categories:
  - **"visible"** fat such as cooking oil and
  - **"invisible"** fat such as the oil naturally present in cereals (maize) and legumes (groundnuts).

Fats and oils

- Fat is important in the diet because weight for weight it provides more than twice as much energy as carbohydrate or protein, thus reducing the bulk of the diet.
- Fats and oils may be good sources of fat-soluble vitamins, and they assist with the absorption of the fat soluble vitamins (ADEK) and other nutrients.
- The best option in choosing fats is to go for those that are liquid at room temperature.

Topic Two

New classification of the food groups

New classification of the food groups

- The Ghana Health Services (Nutrition Division) has reclassified the food Groups into Three (3) groups

1. Body building foods
2. Energy giving foods
3. Protective foods

New and old classifications

NEW	OLD
1. Energy giving foods	1. Cereals and grains, starchy roots and tubers, fats and oils
2. Body Building foods	2. Animal and animal products, Legumes oil seeds and nuts
3. Protective Foods	3. Fruits and vegetables

Topic Three

ASSIGNMENT/DISCUSSION FOR NEXT SESSION

Take home

- List the six food groups
- Which food groups are rich in carotene (pro-vitamin A)?
- Which of the animal source foods contain high quality proteins?