

CHAPTER 2 NUTRITION AND FOOD PRODUCTION

A. NUTRITION AND GOOD EATING HABIT

1. Calorific value.

- Is the energy content of a food / energy produced when 1 g of food completely burned.
- Can be measured by using a Bomb Calorimeter.

2. Calorific value of

- i. Carbohydrates = 17.2kJ g^{-1}
- ii. Protein = 22.2kJ g^{-1}
- iii. Fats = 38.5kJ g^{-1} (double energy than carbohydrates)

(1 calorie = heat required to rise 1 g of water to 1°C)

(Vitamins, water and minerals do not contain any energy)

3. Factors affecting the calorie requirement.

- a. Gender/sex
- b. Body size
- c. Age
- d. Physical activities
- e. State of health
- f. Climate.

4. Health problems

- a. **Malnutrition** – is diet which contains insufficient of nutrients ,etc;

Malnutrition Diseases	Insufficient of
Scurvy/ Gums bleeding	Vitamin C
Rickets	Vitamin D, Calcium and Phosphorus
Night blindness	Vitamin A
Kwashiorkor	Protein

- b. **Obesity** – Extra calories which form fats because of overeating , etc;

Obesity Diseases	Excessive intake of
High blood pressure	Salts, fats and cholesterol
Diabetes mellitus	Sugar and carbohydrates
Gout	Protein
Cholesterol	Fats

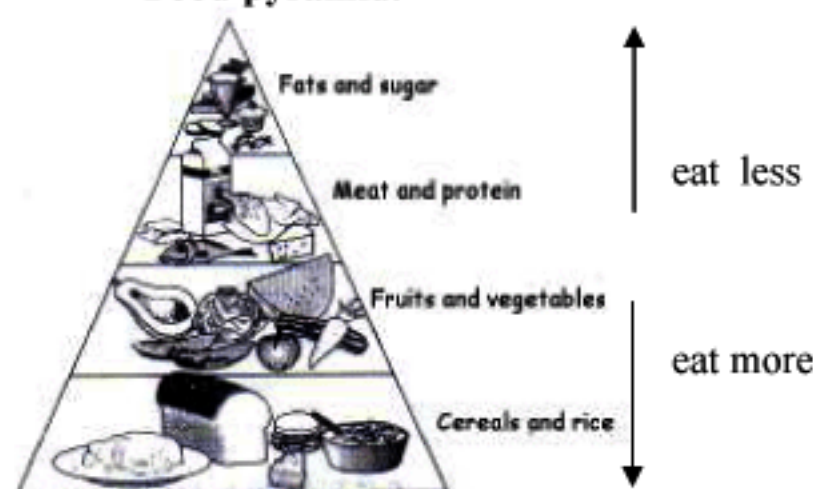
- c. **Anorexia nervosa**
(treatment through counselling only)

- is a psychological illness of dislike eating/refuse to eat.
- i. Due to intense fear of gaining weight and starving oneself to become thin.
- ii. Lead to malnutrition, lost of weight or even death.

5. Balanced diet

- contains all the classes of food in the right amount that needed by our body.

Food pyramid.



Food	Deficiency	Excessive
1. Carbohydrates a. Starch b. Glucose c. Cellulose/Fibre	Marasmus / underweight Coma constipation	Obesity / diabetes
2. Protein (amino acid)	Kwashiorkor	Change into urea by liver.
3. Fats	Underweight , vitamins such as A, D, E and K cannot be dissolved.	Cholesterol , heart attack , high blood pressure.
Vitamins	Function	Deficiency
A	Maintains healthy skin and eye sight.	Night blindness
B	Needed in cellular respiration, maintains a healthy nervous system.	No appetite, beri-beri, pellagra.
C	Wound heals faster, healthy skin and gums, prevents spreading of disease.	Scurvy / Gum bleeding
D	Help clotting of blood, help body to absorb calcium, can be formed by our skin when expose to ultra violet light.	Hemophilia , Rickets , Osteomalacia
E	Maintain the reproductive system.	Sterility
K	Clotting of blood.	Hemophilia / Blood hard to clot
Minerals	Function	Deficiency
Calcium	Formation of bones, teeth and clotting of blood.	Hemophilia, Rickets.
Phosphorus	Formation of bones and teeth.	Rickets , Dental decay.
Sodium	Build up plasma	Muscle cramps
Iodine	Obtain from seaweed and aquatic life , to prevent goiter.	Goitre
Iron	Build haemoglobin in red blood cells.	Anaemia

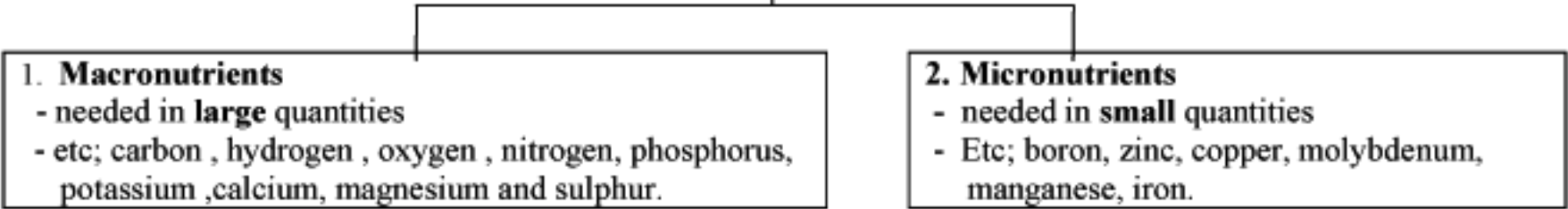
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B.THE NUTRIENT REQUIREMENT OF PLANTS

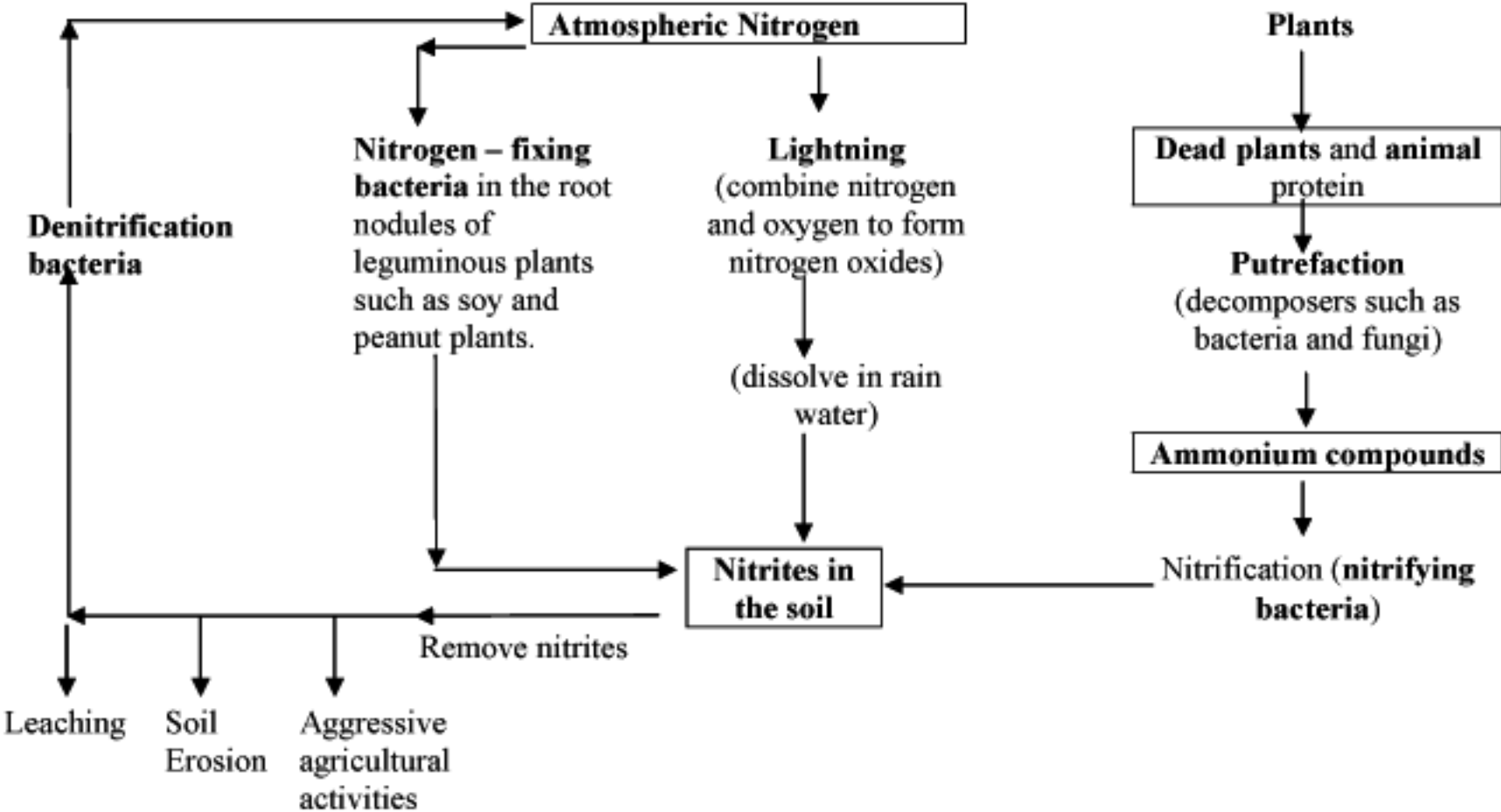
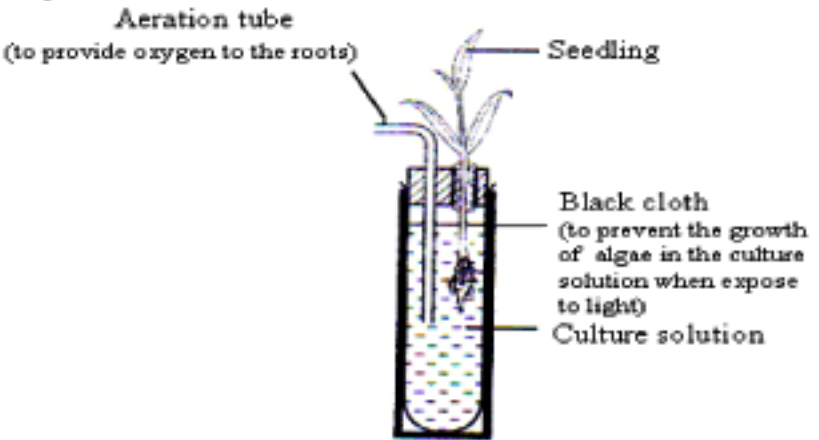
Nutrients needed by plants



3.

Nutrient	Effect of deficiency
Nitrogen	Chlorosis(leaves turn yellow due to lack of chlorophyll)
Phosphorus	Retards growth, short roots, leaves appear dark green with purple or red spots.
Potassium	Yellow patches and death of leaf margins or edges of leaves.

4. **Culture experiment** to observe deficiency symptoms of plants.



PHOTOSYNTHESIS

- to maintain the balance of carbon dioxide and oxygen in the atmosphere
- supply food to green plants/animals.

