

Sustainable Nutrition Pamphlet Series:

Nutrition begins with Agriculture

Summary adapted from the *Sustainable Nutrition Manual* available as a free download at:

www.NeverEndingFood.org/Sustainable-Nutrition-Manual

Nutritional decisions for Agriculture plans

Agriculture can supply everything we need for a healthy diet every day – if we plan well and use all our resources wisely.

A healthy diet provides sufficient calories (the energy from food) and all the required nutrients. Malawi has *hundreds* of foods that can provide us with a health diet: fruits, vegetables, legumes, nuts, oilseeds, grains, roots, animals (including insects and fish).

In addition to foods, agriculture can supply us with fuel and contribute to clean water if we care for our environment. We need to feed our soil and protect it with mulch, compost and a lot of biodiversity to produce everything we need sustainably.

Classes of Nutrients

There are six major classes of nutrients required for the human diet.


- **Proteins** help make the body strong. Bones, hair, muscle and skin are built from proteins.
- **Carbohydrates** provide energy that is not stored in the body for long periods of time.
- **Fats** provide energy that can be stored in the body for long periods of time, if needed. Any excess energy that a person consumes / doesn't is stored as fat.
- **Vitamins** protect the body from infection and disease.
- **Minerals** allow the body to perform essential functions in our bones, teeth, blood, skin and hair.
- **Water** allows the body to maintain all its functions and continually removes waste products. The body cannot survive more than a few days without water.

The Current Meal

Poster 3

Similar problems worldwide....

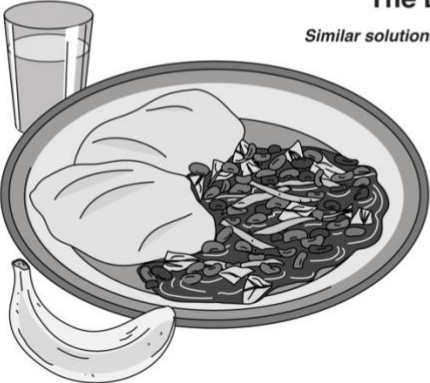
- Few nutrients
- Monoculture
- High risk of crop failure
- High risk of food insecurity
- Environmental degradation
- High input



The Better Meal

Similar solutions world-wide too!

- Many nutrients
- Diverse agriculture
- Increased chance of harvests
- Increased food security
- Healthy environment
- Fewer inputs



Sustainable Nutrition Manual by Stacia Nordin, editing & illustrations by Sarah Beare
Funded by World Food Program Malawi, 2016. Download (free) from www.neverendingfood.org

Functions of Nutrients

These six classes of nutrients work together to perform three essential functions: provide energy, protect the body from disease, and promote growth. As described in the *Sustainable Nutrition Manual*, these three functions can be explained with the Go, Glow, Grow explanation:

- **Energy foods (GO)** - Several nutrients provide energy: **carbohydrates** (from grains, roots, legumes, nuts, and fruits), **proteins** (from animal foods, legumes, nuts and oilseeds), and **fats** (from animal foods, oilseeds, nuts, some legumes such as soy bean, and some fruits such as avocado or coconut) provide us with energy. Ideally, most energy should come from carbohydrates, some from protein, and a little from fats. These nutrients provide the energy a gardener needs to do daily activities. While balancing our energy intake from these three nutrients, at the same time it is important to get as much glow and grow as we can from our energy sources.
- **Protection foods (GLOW)** - **Vitamins, minerals and water** are the most important nutrients for protection. All of the food groups can provide vitamins and minerals, but are especially high in vegetables, fruits, legumes, nuts, oilseeds, animal foods and water. Grains tubers can provide vitamins when they are eaten as 'whole grains' or with their edible skins (for example, cleaning an Irish potato well and cooking and eating it with its skin on).
- **Building foods (GROW)** - **Protein** is the main nutrient that helps the body grow. Key protein-rich foods include animal-source foods, legumes, and nuts. Most protein-rich foods also provide minerals. Protein deficiency is a common problem in many developing countries.

Eating a Balanced Diet: Food Groups

A healthy diet is a balanced diet.

- **Fruits, vegetables and legumes & nuts** combined should cover more than half of your plate;
- **Staples** (cereals, roots, and tubers) should cover just over a quarter of the plate; and
- **Animal foods** and fats should each be the smallest.

The visual representation of a balanced, varied diet shows that there are many options for each food group, it does NOT mean that you have to eat all those foods in one day.

You do not have to eat all the food groups at every meal, but by the end of the day all the food groups should have been included.



Planning for a Balanced Diet

To increase household nutrition, it is not enough to just produce the foods described; each individual in the household must consume them. Therefore, a program will want to pair home garden production with lessons about food planning and consumption and ideally include hands-on activities to prepare and eat balanced meals together.

The nutritional messages complementing permaculture designs gardens should focus on the key nutritional imbalances for the local region. The main nutrition imbalances that impact human health and productivity in most developing countries include:

- Excess carbohydrates (cereals, tubers, refined sugars)
- Inadequate protein and fat consumption
- Inadequate vitamin and mineral consumption

By balancing and diversifying agriculture and the diet using the food groups described above the nutrient imbalances that are currently seen in developing countries can be reduced.

A good strategy to improve household nutrition is to design and plant a permaculture designed garden that contains a diversity from the food groups that are often lacking: fruits, vegetables, legumes and nuts.

- **Brightly** colored fruits and vegetables, especially orange, yellow, and dark green leaves have higher levels of vitamins and minerals than light colors.
- **Some** vegetables and fruits also have edible seeds that are high in fat, protein and minerals (for example pumpkin seeds or melon seeds).
- **Legumes** and nuts are high in proteins, vitamins, minerals and some are also high in fat.











How much of each food group do I need?

Adult food needs by food groups		KCal per day	% KCal	Per day (g)	Per year (kg)
Staples	Grains	838	38%	250	91.3
	Tubers	240	11%	250	91.3
Fruits	Fruits	150	7%	300	110
Vegetables	Vegetables	96	4%	300	110
Legumes and nuts	Plant Proteins	588	26%	150	55
Foods from animals	Animal Proteins	58	3%	75	27
Fats	Fats	235	11%	50	18
TOTALS		2,205 kcal	100%	1,375 g	503 kg

Tbsp = tablespoons; L = Litre

Meals and Snacks

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Current Choices		Better Choices
	Breakfast	
	Snack	
	Lunch	
	Snack	
	Supper	

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The following list contains the key nutrients needed in a diet, the foods that contain those nutrients, and the function of those nutrients in the body.

Nutrient	Fruits	Vegetables	Legumes & Nuts	Animal Foods	Fats & Oils	Staples	Functions
Key Vitamins							
Vitamin A	Orange or Red Fruits	Dark Leafy Greens, Orange or Red Vegetables;		Milk, Butter, Fish	Pal oil, Moringa oil, Fish, Butter	Orange Fleshed Tubers	Improves eyesight and strengthens the immune system
B Vitamins	Baobab, Bananas, Oranges	Dark Leafy Greens, Broccoli, Okra	Legumes & Nuts	Animal Foods	Oil Seeds, Avocados,	Whole Grains	Helps support metabolism, the nervous system and creating blood cells.
Vitamin C	Baobab, Tamarind, Citrus, Hibiscus	Dark Leafy Greens, Peppers, Broccoli, Cabbage, Tomatoes,				Yams, Raw Cassava	Helps strengthen the immune system
Vitamin E	Tamarind	Dark Leafy Greens	Nuts		Oil Seeds	Yams, Sweet Potato	Helps strengthen the immune system
Key Minerals							
Calcium		Dark Leafy Greens, Okra	Legumes & Nuts	Dairy, Fish Bones, some meats, insects	Sesame seeds and several other seeds	Millet	Helps make bones and teeth strong
Iron	Dried fruits such as raisins	Dark Leafy Greens	Legumes & Nuts	Meat, poultry	Oil seeds		Needed to create blood cells and carry oxygen to your tissues.
Iodine * some table salt is Iodized			Legumes	Seafood, Sea salt, Dairy, eggs		Potatoes	Helps the brain and body grow properly
Magnesium		Dark Leafy Greens	Legumes & Nuts	Fish, seafood	Oil seeds	Whole grains	Allows muscles and nervous tissue to function
Selenium		Mushrooms	Nuts (Brazil nuts very high)	Animal foods		Whole grains	Helps maintain a strong immune system
Zinc		Dark Leafy Greens	Legumes & nuts	Animal foods	Oil seeds	Whole grains	Helps all parts of the body grow and develop
High energy nutrients often lacking:							
Proteins		Dark Leafy Greens	Legumes & nuts	Animal foods	Oil seeds	Whole grains	Helps the body grow muscle and repair from injury
Fats			Soybeans, Nuts	Animal foods	Fats & oils		Energy source, absorption of fat soluble vitamins
Nutrient most-often forgotten:							
Water * Drinking water is the best source of water!	Most fruits, Fruit juices	Herbal teas, many vegetables have some water	Milks made from Legumes & Nuts	Milk			Removes wastes, carries nutrient, maintains temperature, absorption of water soluble vitamin