Sustainable Nutrition: Malawi is Rich with Potential

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Objectives, to share:

1. Status and Causes of Malnutrition – in a nutshell

2. Processes, research efforts and approaches used to improve agriculture nutrition programs and policies in Malawi

3. Programme tools & strategies to address all forms of malnutrition
Agriculture is the Foundation of Nutrition

Current Imbalance

1. Need Diverse Production of All Food Groups for Diverse Consumption
2. Ecological Agriculture is the Best for Earth & People
Malawians eat more maize per capita than any other country on earth!

Over ½ of calories are from just 1 food.

85% of land is used to grow maize

75% of calories consumed is from maize

Maize was brought to Southern Africa from Central America about 300 years ago

Staple food security is NOT food security

Yet, this is the focus for most programmes in Agriculture, Food security & Food Aid.
Agriculture, the Basis of Nutrition

75% of Agriculture & Diets are Maize
47% of Malawi’s children are nutritionally “stunted”

Unbalanced Meal

Balanced Meal

Same Amount - Balanced Groups with More Variety
Agriculture – the Basis of Nutrition

Unbalanced production

- Too Much Maize
- Soil & Water Loss

All Seasons (rains vs. dry)

Balanced Production

- Diverse Production
- Care for the Earth

All Seasons (rains vs. dry)

- Permaculture
- Designed with Nature
- Care for Earth, Care for People, Fair Share

Bare

- Soil & Water Loss
“Agro-ecology and the Right to Rood”

March 2011: Agroecology, if sufficiently supported, can double food production in entire regions within 10 years while mitigating climate change and alleviating rural poverty.

Permaculture: Designing Sustainable Human Systems
Any Size – Any Place


Malnourished = Drought
Floods
Low Yield

Nourished = Resilient
Sustainable
Productive
The Difference 7 Months can make!

(1) Before Wife sweeping 1 hour+ each day
(2) Month 1 Reduced sweeping and beds
(3) Month 7 Area flourishing with foods

(1) 2005 July: Before
(2) 2005 Aug: 1 month
(2) 2006 Jan: 7 months
Agriculture – the Foundation of Nutrition

Environment + Agriculture = the foundation of Nutrition, the source of our nutrients

Nutrition Security = Nutrient needs met for growth, health & energy

Medication Soil, Food, Water & People can be avoided with a healthy foundation

Nutrition

Good Nutrition

Health

Body & living conditions: care, water, sanitation, hygiene

Food & Water Security

All food groups & water: available, accessible, utilized, all the time

Human Systems

For food, water, health, education, policies, etc.

Natural Resources & Systems

Soil, water, air, vegetation, animals (including insects & humans)
**Systems are currently out of balance**

**Requires higher inputs**

**High levels of Poor Nutrition**

**Poor Health**
- Unhealthy lifestyles, Poor living conditions.
- High level of Illness, Disease.
- High use of Medications & Treatments

**Food & Water Insecurity**
- Calories, but lacking nutrients
- Water becoming serious threat

**Inadequate Human Systems**
- Inequality, Poverty, Education, High Population Growth,
  - Economic Instability, Violence, Political instability

**Natural Resource Degradation**
- Unhealthy Soil, Water & Air,
  - Increasing Extinctions, Loss of Biodiversity

**Higher Medications for People**
- Food & Water
- Plants, Animals, Soil
Malawi: Heights & Weights of Children under 5 years

Slight improvements from 1992 to 2016 (~24 years)

<table>
<thead>
<tr>
<th>Year</th>
<th>Stunted</th>
<th>Underweight</th>
<th>Wasted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992 MDHS</td>
<td>55.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 MDHS</td>
<td>24.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004 MDHS</td>
<td>6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 MICS</td>
<td>13.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010 MDHS</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Global

2015/6 MDHS Preliminary

Stunted: Too short for age
Underweight: Too thin for age
Wasted: Too thin for height

Chronic nutrition/health issue
Chronic or Acute
Current nutritional status
Malawi is Getting Heavier! We need Good Nutrition for ALL!

- Adults who were **stunted** during childhood have an increased risk of overweight & obesity.
- High risk for **Non-Communicable Disease**: High blood pressure, Diabetes, Heart diseases.

Global

<table>
<thead>
<tr>
<th>Year</th>
<th>Overweight</th>
<th>Obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 MDHS</td>
<td>9.8</td>
<td>2.0</td>
</tr>
<tr>
<td>2004 MDHS</td>
<td>11.2</td>
<td>2.4</td>
</tr>
<tr>
<td>2010 MDHS</td>
<td>13.1</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Global

- 38% Overweight
- 12% Obesity

**NEW NORMAL**

57 out of 129 surveyed countries currently experience serious levels of both undernutrition and adult overweight & obesity.

**Global**

**THINK YOUR COUNTRY DOESN’T HAVE A NUTRITION PROBLEM? THINK AGAIN.**

Countries are making some headway on reducing undernutrition, but it’s far too slow. And overweight and obesity are getting worse, not better.
1. The total annual costs associated with child undernutrition are estimated at 10.3% GDP:
   - 147 billion mk
   - 597 million USD

2. 66% of the adult population engaged in manual activities were stunted as children, an annual loss of:
   - 16.5 billion mk
   - 67 million USD
Healthy Eating & Living:

1. Healthy Diverse Diets
   - Pregnant & Lactating Women
   - Fathers, Siblings, Grandparents, etc.

2. Infant Young Child Feeding:
   - Exclusive breastfeeding (0 - 6 mo.)
   - Complementary feeding (6 - 24 mo.)

3. Water, Hygiene & Sanitation

THESE 10 WILL DIMINISH AS WE IMPROVE:

- Treatments / supplements:
  4. Vitamin A supplementation
  5. Zinc supplementation for diarrhoea
  6. Deworming
  7. Iron & folate supplements
  8. Salt iodisation
  9. Prevent & treat Undernutrition
 10. Treat Severe Acute Malnutrition
 11. Multiple micronutrient powders
 12. Iodised oil capsules
 13. Iron fortification of staples
Food Security = ALL food groups

Disconnect between Agriculture & Nutrition

<table>
<thead>
<tr>
<th></th>
<th>1 day</th>
<th></th>
<th>1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Adult Cal</td>
<td>% Calories</td>
<td>1 adult (Kg)</td>
</tr>
<tr>
<td></td>
<td>Calories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Staples</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ Grains</td>
<td>838</td>
<td>38%</td>
<td>90</td>
</tr>
<tr>
<td>½ Tubers</td>
<td>240</td>
<td>11%</td>
<td>90</td>
</tr>
<tr>
<td>2. Fruits</td>
<td>150</td>
<td>7%</td>
<td>108</td>
</tr>
<tr>
<td>3. Vegetables</td>
<td>96</td>
<td>4%</td>
<td>108</td>
</tr>
<tr>
<td>4. Legumes &amp; Nuts</td>
<td>588</td>
<td>26%</td>
<td>54</td>
</tr>
<tr>
<td>5. Animal Foods</td>
<td>58</td>
<td>3%</td>
<td>36</td>
</tr>
<tr>
<td>6. Fats</td>
<td>235</td>
<td>11%</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL food needed:</td>
<td>2,205</td>
<td>100%</td>
<td>504</td>
</tr>
</tbody>
</table>

Agriculture = maize

Agriculture = 300 kg maize
Global FOOD Supply

7,000 plant foods available

3 crops = 50 % plant energy

30 crops = 95 % calories & protein

FAO 1997
Do we have the foods we need in Malawi?
YES! Malawi has at least 600 different foods.
Plus species for soil fertility, medicines, energy, building, fibres, finances, etc.
Improving Policies, Strategies and Guidelines
What role for agriculture in nutrition?

Natural Resource Environment
- Water
- Soil
- Seed and stock

Food Market Environment
- Food availability
- Food prices
- Food diversity
- Retail and marketing
- Agricultural policy

Home Environment
- Food safety
- Water
- Contaminants
- Nutrients

AGRICULTURE
- farm inputs
- Livelihoods
  - Credit
  - Technology
  - Knowledge & skills
  - Institutions

PROCESSING
- Post-harvest
  - Handling
    - Wastage
    - Processing
    - Storage
    - Contamination

Agricultural income

Food expenditure

Food allocation

Non-agricultural income

Non-food expenditure

Health care

Diet

Health status

Individual & Parent’s Caring capacity & practices

Female energy expenditure

Women’s time and empowerment

Nutrition / health knowledge and norms

HOUSEHOLD ASSETS
- farm inputs
- Livelihoods
  - Credit
  - Technology
  - Knowledge & skills
  - Institutions

National economic growth

National nutrition profile

Agricultural income

Food expenditure

Agricultural income

Non-agricultural income

Health status

Individual & Parent’s Caring capacity & practices

Female energy expenditure

Women’s time and empowerment

Nutrition / health knowledge and norms

Slightly Adapted
By Stacia Nordin@illinois.edu
What has the best impact on stunting?

Continue as is?  Production for Food Security (FS)? Nutrition Education (NE)?

Action Research, Mzimba & Kasungu 2011 - 2015
Biodiverse Food Cards & Food Availability Calendar

**Kabaifa, Chimbamba, Kamumpanda, Lima Bean**

*Phaseolus lunatus*

Edible Parts:
- Seeds, leaves

---

### Food Groups

<table>
<thead>
<tr>
<th>Food Groups</th>
<th>FOODS Available</th>
<th>Dec–Mar</th>
<th>Apr–Jul</th>
<th>Aug–Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Staples</strong></td>
<td>Green Banana, Plantain</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Maize, Chimanga</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Millet, Mavure</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Cassava, Chinangwa</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Yams, Chiłazi Mpama</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>2. Fruits</strong></td>
<td>Mango</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Papaya</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Banana</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Masuka</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Chisale</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>3. Vegetables</strong></td>
<td>Mushrooms, Bowa</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Amaranth, Bonongue</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Hibiscus leaves, Limanda</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Cassava leaves, Chīrwada</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Chīpwete</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>4. Legumes &amp; Nuts</strong></td>
<td>Beans, Nyemba</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Cowpeas, Khobwe</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Groundnuts, Mtemza</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Pigeon Peas, Nandolo</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Lima Beans, Chimbamba, Kamumpanda</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>5. Animal Foods</strong></td>
<td>Termites, Ngumbi</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Eggs (chicken, ducks, etc.)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Rabbits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Milk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Goat</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>6. Fats and Oils</strong></td>
<td>Avocado, Mapenzala</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Coconut</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Sunflower seeds</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Pumpkin seeds</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Sesame Seeds</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Water**

✓ ✓ problem
IYCF Recipe Books: with flexible, diverse ingredients
Millet nsima served with roast beef, beans, green vegetables and guava juice

Niakula (one pot dish of boiled maize, groundnuts, carrots) and an orange

Mbalegha (one pot dish of plantains, goat meat, green vegetables (chisoso)) and an orange

Cassava flour (kondole) nsima served with small fish (kapenta), green vegetables and a tangarine
Other Materials:
Farmer Field School
Nutrition Handbook
July 2015

Section 1: Integrating nutrition into farmer field schools .................... 2
Section 2: Food and nutrition issues and solutions ............................ 6
Section 3: Crop growth and human growth ........................................ 22

Monitoring and planning for our farm’s health and productivity

- To make proper use of available resources, farmers require planning so that there is efficient use of land, water, labour, time, money, and other resources.
- Farmers should aim at re-investing their financial resources to improve production.
- Planning farm activities in advance will help farmers ensure inputs are stored and purchased in a timely way.

Monitoring and planning for our families’ health and productivity

- It is important to plan and manage food in a household annually before production and after harvesting to ensure food sufficiency and nutrient losses.
- If growing cash crops, ensure some land is reserved for food crops for family consumption or use the income from the cash crop to buy variety of foods.
- Reserve enough food for household consumption before selling, trading, or giving it away.
- Preserve vegetables and fruits by drying under a shade in a solar dryer.
- Process and preserve perishable fruits like dessno and sweet potatoes into foods and then use (preserve) when they are plentiful to reduce wastage.
- Reduce food waste by setting only enough food in the family needs.
Emergency Nutrition
February 2015

1. Food Security = All Food Groups Every Day

1) Food Security
When people think of food security they often only think of the Staple food group, but that's not true! Thinking of only staples creates problems with food security, nutrition, environmental health and our finances, too. We need to start thinking of Food Security as "All Food Groups Every Day".

2) Six Food Groups
In 1999, Malawi released a food guide poster and community nutrition manual to guide food choices at different stages of life. The poster and manual are currently under revision. For a few ideas on what might be available in your area from each food group, see the next page "Foods Commonly Available in Malawi". There are more than this - keep adding to the list!

3) How much should I eat?
Many people eat too much from the Staple food group and not enough from the other food groups. To have the best nutrition you need to have a balance from the food groups — like is shown and listed in the table.

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Adult 2,100 kcal</th>
<th>Primary 1,600 kcal</th>
<th>Pre School 1,200 kcal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Staples</td>
<td>250 g</td>
<td>200 g</td>
<td>150 g</td>
</tr>
<tr>
<td>2. Fruits</td>
<td>300 g</td>
<td>200 g</td>
<td>150 g</td>
</tr>
<tr>
<td>3. Vegetables</td>
<td>300 g</td>
<td>200 g</td>
<td>150 g</td>
</tr>
<tr>
<td>4. Legumes &amp; Nuts</td>
<td>150 g</td>
<td>100 g</td>
<td>75 g</td>
</tr>
<tr>
<td>5. Animal Foods</td>
<td>75 g</td>
<td>27 g</td>
<td>20 g</td>
</tr>
<tr>
<td>6. Fats &amp; Oils</td>
<td>50 g</td>
<td>20 g</td>
<td>10 g</td>
</tr>
<tr>
<td>Water</td>
<td>2.1 L</td>
<td>2-3 L</td>
<td>1.2 L</td>
</tr>
</tbody>
</table>

Total Amount: 1.4 kg (Adult) 1 kg (Primary) 0.7 kg (Pre School)

2. Foods Commonly Available in Malawi

1. Staple Food Group
   - Daily eat about 300 g cereals plus 250 g starchy tubers/fruits.
   - Always take care to know what you are eating. Almost every local people dig in Malawi from eating the right tuber - know your local foods!

2. Other Materials

Other Materials
Emergency Nutrition
February 2015
Malawi is Rich!
Produce & Eat all food groups

Staples

Fats

Fruits

Vegetables

Animal Foods

Legumes & Nuts