Ending Hunger and Undernutrition: Achieving SDG 2

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Progress and Commitment

- Rates of hunger and poverty declining
- Agriculture-Nutrition linkages
- Stunting rates coming down, but still high
- Global Commitment in SDG 2
- Global Food Security Act signals US support
**Hidden Hunger Index (micronutrient deficiencies)**

- Source: Muthayya et al. 2015

**GFSA Results Framework 2017 to 2021**

- **Goal:** Sustainably reduce global hunger, malnutrition, and poverty

- **Objective 1:** Inclusive and sustainable agricultural-led economic growth
  - IR 1: Strengthened inclusive agricultural systems that are productive and productive
  - IR 2: Strengthened and expanded access to markets and trade
  - IR 3: Increased employment and income among people and systems
  - IR 4: Increased sustainable productivity, particularly through improved agricultural approaches

- **Objective 2:** Strengthened resilience among people and systems
  - IR 5: Improved household food insecurity, nutrition, and resilience
  - IR 6: Increased household food security and recovery from shocks and stress

- **Objective 3:** A well-nourished population, especially among women and children
  - IR 7: Increased consumption of vitamins and minerals
  - IR 8: Increased use of vitamins and mineral interventions and assistance

**Cross-Cutting Intermediate Results (IR)**

- IR 1: Strengthened global commitment to investing in food security
  - CC IR 1: Improved human, organizational, and system performance
  - CC IR 2: More effective governance, policy, and institutions
  - CC IR 3: Increased gender equality and women's empowerment
  - CC IR 4: Increased public empowerment and collective action
  - CC IR 5: Improved human, organizational, and system performance

Agricultural growth is poverty-reducing

Poverty-growth elasticities (US$1.25 poverty line)

- Malawi
- Mozambique
- Tanzania
- Uganda
- Zambia

Agricultural growth continues to be more poverty-reducing than non-agricultural growth

Agricultural growth reduces hunger

- **Agricultural growth enhances hunger reduction**
  - Increases household incomes and diversifies diets
  - Reduces food prices to benefit poor net food buyers
  - Creates employment; stimulates rural nonfarm economy

- **Whether subsectoral growth reduces hunger depends on**
  - Its linkages with rest of economy
  - Its initial size and geographic concentration
  - Its growth potential
  - Market opportunities

Calorie deficiency-growth elasticities, Tanzania (2000-07)
Economic growth and nutritional outcomes

Increases in households’ purchasing power directly impacts nutrition

A 10% increase in GDP/PC leads to a 6% reduction in stunting

From Martin Bloem, UNICEF
Stress Tolerant Maize during El Niño

SC513 Murewa, Zimbabwe CZH132018

Peter Setimela

What Small Scale Irrigation can look like
24% of the world’s 667 million children are stunted

Diverse nutritional status demands diverse solutions

- Reduce energy deficiency
- Reduce micro-nutrient deficiency
- Reduce excessive net energy and unhealthy diets
What Works to Reduce Undernutrition?

- **Nutrition-specific** interventions are those that address the immediate causes of undernutrition
  - Health Status
  - Nutrient Intake
- **Examples**
  - Infant and Young Child Feed Practices/ENA
  - Micronutrient fortification/supplementation: Iron, Zinc, Vit. A
  - Integrated Management of Child Illness
  - Community Management of Acute Malnutrition

Contribution of Different Sectors to Improving Nutrition Globally

- **Food**: 32%
- **Water & Sanitation**: 35%
- **Women’s Education + status**: 33%

Source: Smith and Haddad, 2013

*116 developing countries (1970-2010)*
Target production of nutrient-rich foods, ideally those that include nutrients lacking in diet
Include behavior change communication component specifically aimed at consumption of target crops
Ensure target food availability and affordability in local markets and support consumption education
Measure outcomes, including intermediate targets such as consumption and market availability

Rhoda Mang’anya supports 7 people on ~1/2 ha.
Today she uses improved maize varieties and fertilizers, but only because of what else she does.
“I started keeping pigs and goats to support my children in school... and buying of salt, sugar, soap, relish.”

Evidence?

In Ethiopia
- Cow ownership reduced stunting by 6-13%

In millennium development village clusters
- Households with livestock are more likely to consume animal-source foods
- Linking animal-source food consumption with anthropometric measures is complex and influenced by other variables
Meat group
• Highest Raven scores
• Higher Vit. B12 status
• More physical activity
• More Arm muscle mass
• More leadership
• Higher test scores
• More playful

Milk group
• Improved growth
• Higher test scores
• Higher B12 status

Adapted from Demment, 2013

Sources and sales of animal products
• 90% of animal products are produced and consumed in the same country or region
• Most are produced by smallholders
• Over 70% of livestock products are sold ‘informally’
• 500 million smallholders produce 80% of the developing World’s food. 43% of the workforce are women

Compared to all other groups, the MEAT GROUP
- Had greatest increase in % time spent in high activity levels, and least % time in low activity
- Spent more % time in leadership and initiative
- Were more talkative, playful – and “disruptive”
Aflatoxin

- Produced by *Aspergillus flavus, A. parasiticus*
  - Maize, peanuts, tree nuts, cottonseed, spices
  - Exposure highest in warm regions where maize & peanuts are dietary staples (Africa, Asia)
- Human health effects
  - **Liver cancer**
    - Synergizes with chronic hepatitis B virus (HBV) infection: much higher risk than either exposure alone
    - P450 enzymes in liver transform aflatoxin to epoxide form, binding to DNA: DNA lesions → cancer
    - Childhood stunting, acute aflatoxicosis (liver failure), immunomodulation
- Each year: up to 200,000 global aflatoxin-related liver cancer cases (Liu and Wu 2010, Liu et al. 2012)

Interventions to reduce mycotoxin risk

- **Preharvest**
  - Good agricultural practices
  - Genetically enhancing plants’ resistance
  - Biocontrol
- **Postharvest**
  - Improved sorting, drying, food storage
- **Dietary**
  - Improved dietary variety
  - Dietary enterosorbents (binders)
    - NovaSil used commonly in US animal feed
  - Dietary chemoprevention
    - Chlorophyll, chlorophyllin
    - Compounds in cruciferous & Allium vegetables
    - Triterpenoids (in grasses, herbs, apple peels)

from Felicia Wu, 2017
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