

# INTEGRATING NUTRITION AND AGRICULTURE

## NUTRITION SENSITIVE VALUE CHAINS

### ZAMBIA CASE STUDY

### COLLABORATIVE ACTION IN DEPLOYING BIOFORTIFIED CROPS

**Presenter: Eliab Simpungwe - HarvestPlus**

# OUTLINE OF PRESENTATION

- » **Context: Background information**
- » **Biofortification science**
- » **Nutrition sensitive value chains – Zambian experience with Vitamin A Maize**
- » **Lessons, opportunities, challenges and recommendations**



# CONTEXT

## ZAMBIA STATISTICS

**Population**  
**13million**

**Small holder**  
**Farmers : 1.2 - 1.4**

**Economy: Copper and**  
**Agriculture -**  
**supports 70%**  
**livelihoods**

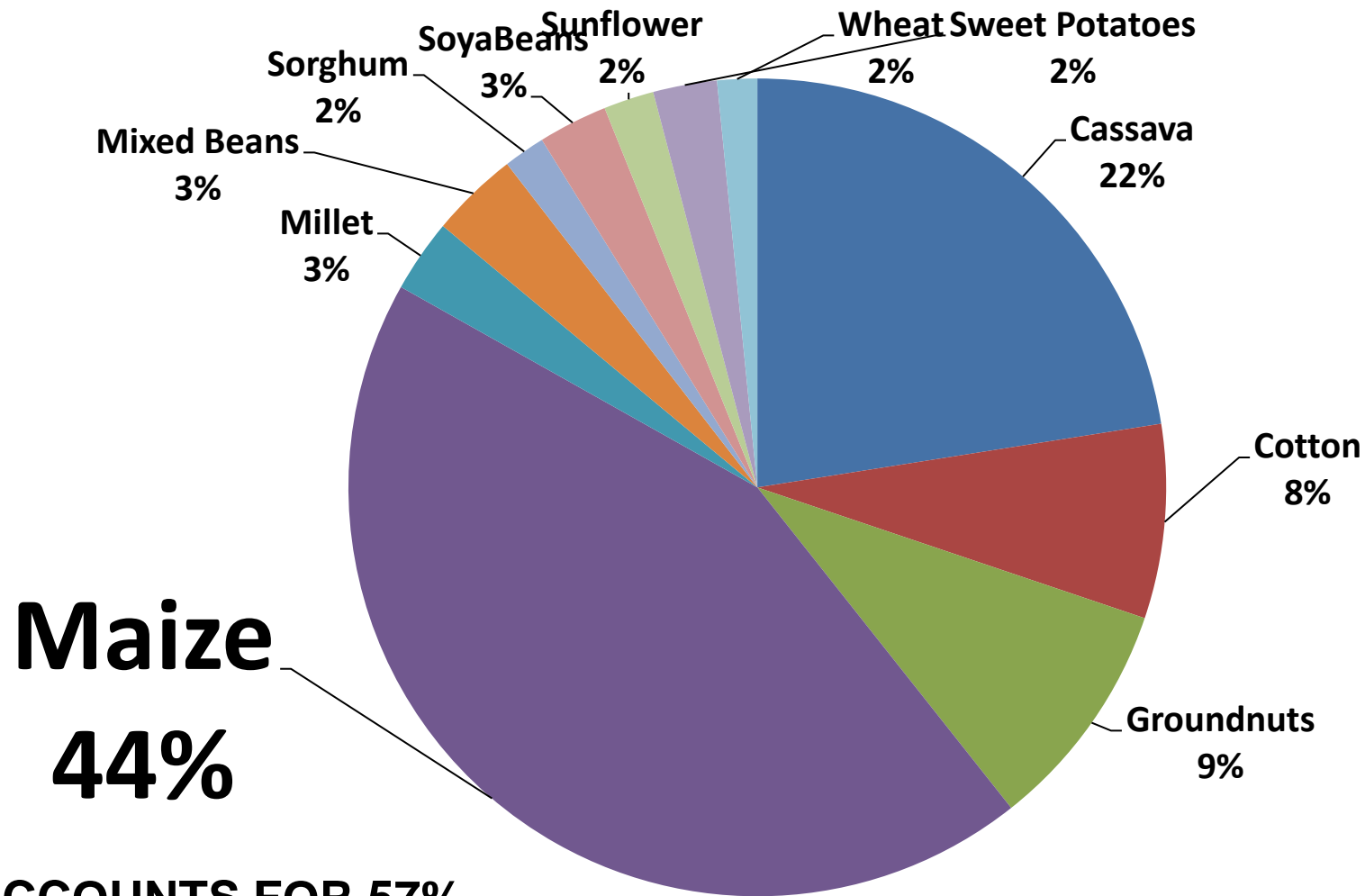
**Crops: Maize,**  
**Gnuts, Beans,**  
**Millet, Cassava**

**Life Expectance:**  
**40 years**



# CONTEXT

## ZAMBIA CROPPING PATTERN



**Maize**  
**44%**

**ACCOUNTS FOR 57%  
DAILY CALORIC  
INTAKES**

**TAKES AT LEAST 43% OF  
AGRICULTURAL BUDGET**



# CONTEXT - NUTRITION

## STUNTING

45% National average for children under 5 years. 21% being severe.

## VITAMIN A DEFICIENCY

54% of children under 5 years severely affected

## ANEMIA PREVALENCE

Children 6 – 59 months = 46.9% (1999) among pregnant women = 50 % of women attending antenatal clinics are affected

## UNDER WEIGHT

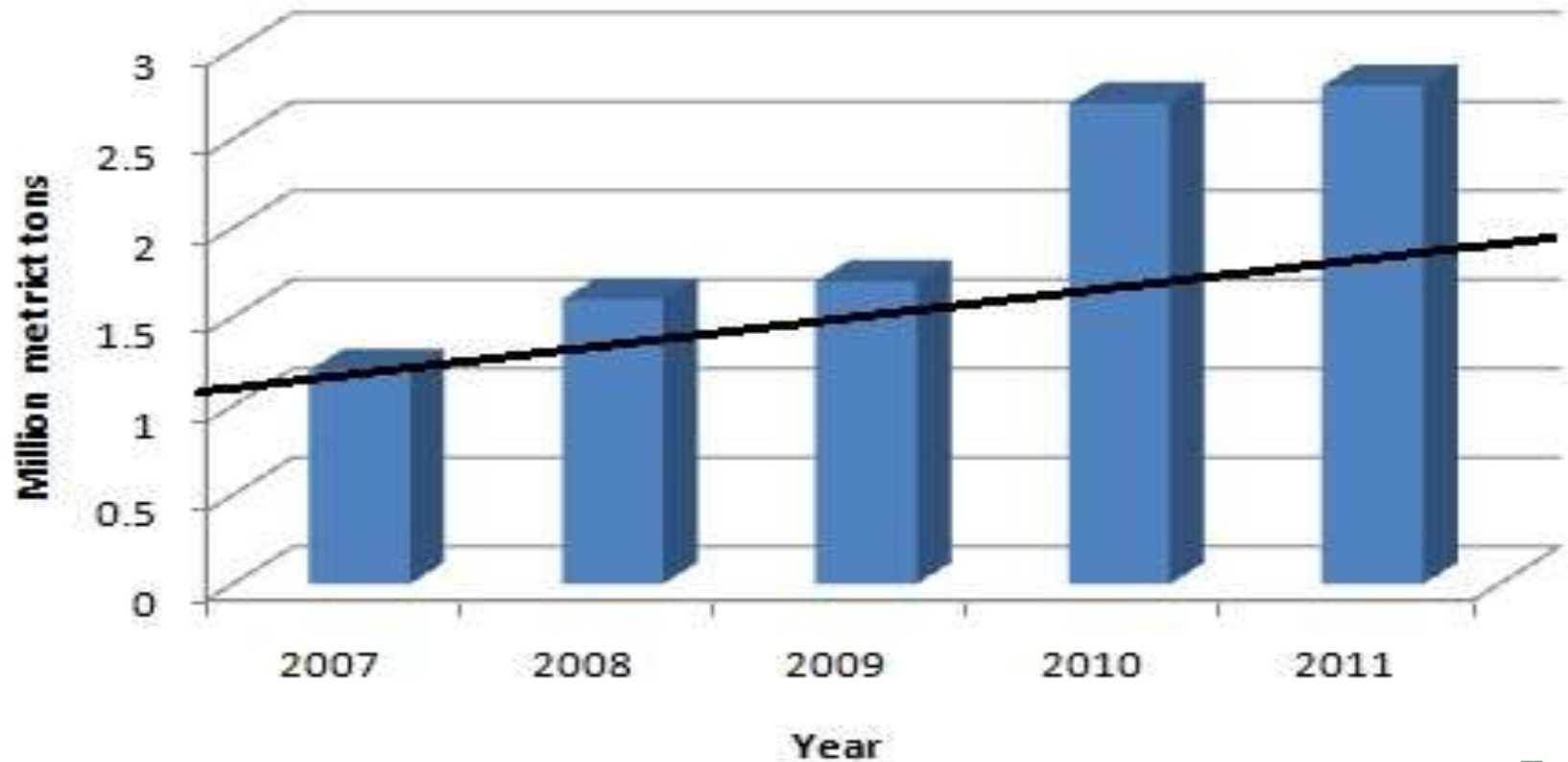
15% of children under 5



# CONTEXT

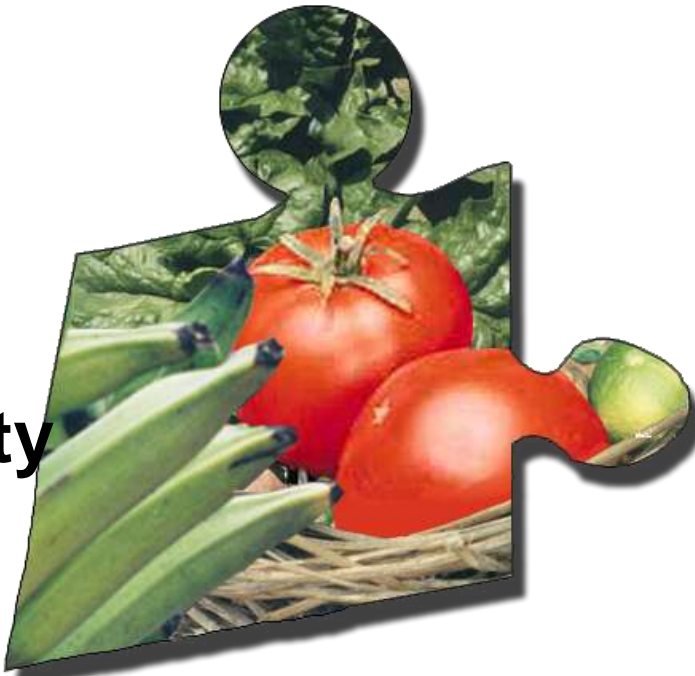
## Food Security with limited Nutrition Security

Zambia white maize production has been outstripping annual maize requirements



# RESPONSE TO UNDERNUTRITION SOME HIGH IMPACT INTERVENTIONS

**Dietary  
Diversity**



# DIETARY DIVERSITY



- » **Cook books are distributed and utilisation workshops are conducted by MAL and Partners**



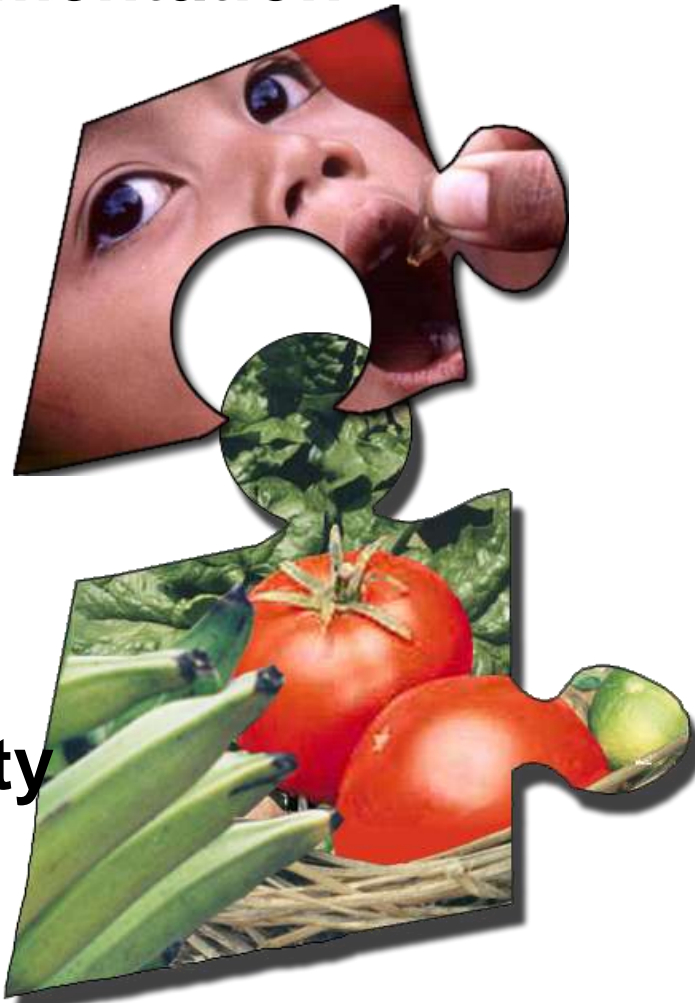
- » **Utilisation of fish and animal sources of micronutrients is promoted. Milk is included in school feeding programs. Fish provides 30% of protein needs in local diets.**





# RESPONSE TO UNDERNUTRITION SOME HIGH IMPACT INTERVENTIONS

**Supplementation**



**Dietary  
Diversity**



# SUPPLEMENTATION



- » **Twice per year children under 5 years receive Vitamin A capsule supplements**
- » **Achieves a geographical coverage of about 90%**
- » **It is estimated that supplementation results in 23% reduction in mortality.**



# RESPONSE TO UNDERNUTRITION SOME HIGH IMPACT INTERVENTIONS

**Supplementation**



**Commercial  
Fortification**



**Dietary  
Diversity**



# COMMERCIAL FORTIFICATION



» **By mandate, refined sugar in Zambia is fortified with Vitamin A**

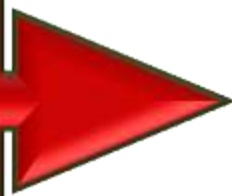


» **Several other commercial products are fortified with Vitamin A**



# UNDERNUTRITION!!!!!!!!!!!!!!!!!!!!

**STUNTING**



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**VITAMIN A DEFICIENCY**



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**ANEMIA PREVALENCE**



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**UNDERWEIGHT**

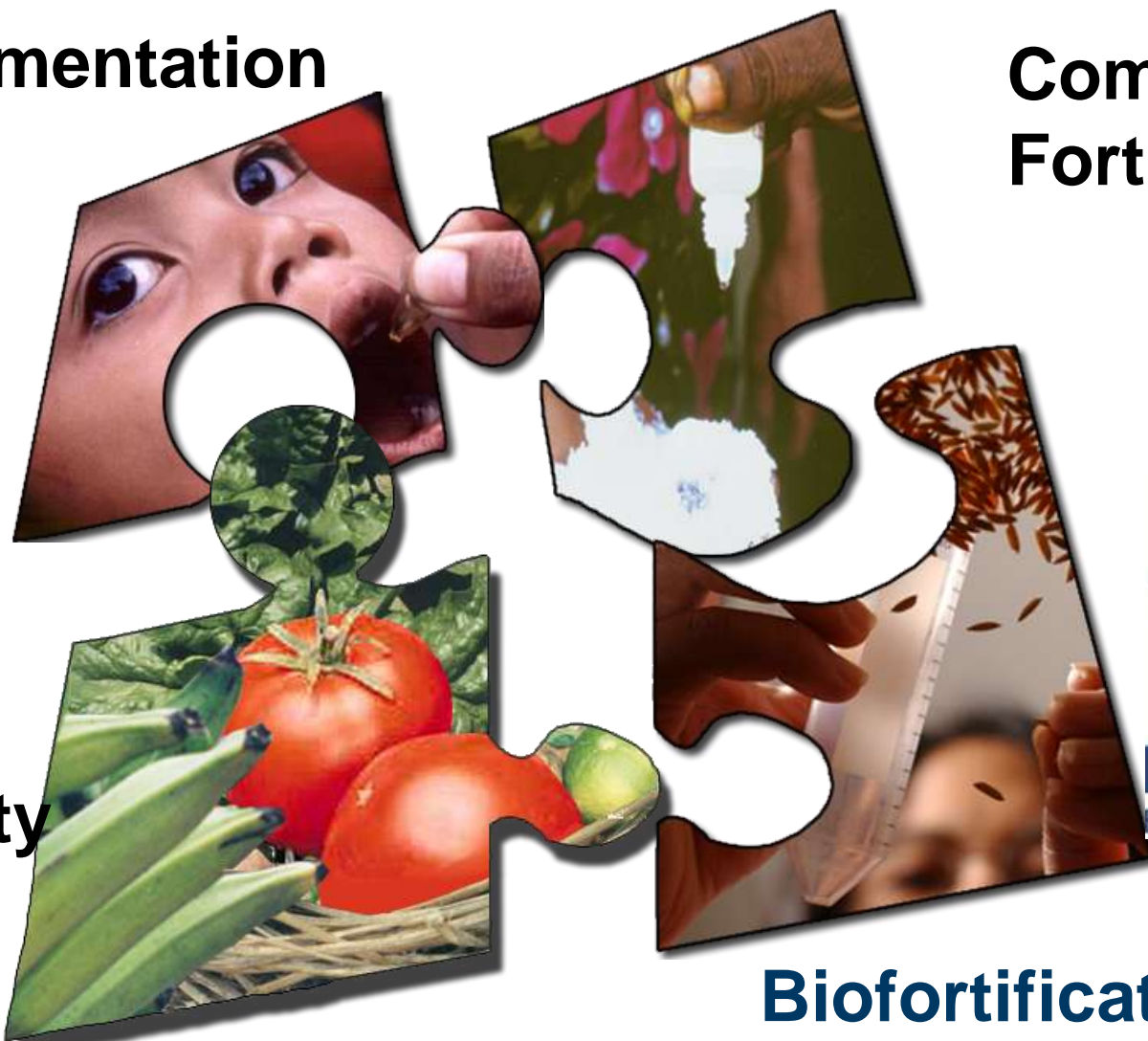


15% of children under 5



# RESPONSE TO UNDERNUTRITION SOME HIGH IMPACT INTERVENTIONS

**Supplementation**



**Commercial  
Fortification**



**Dietary  
Diversity**

**Biofortification**



# BIOFORTIFICATION SUSTAINABLE FOOD BASED INTERVENTION

- » Biofortification is an agricultural approach to better nutrition.
- » Uses conventional breeding to select for higher vitamin and mineral contents in staple crops (is not GMO)
- » Focuses on 3 micronutrients that are most limiting: vitamin A, zinc, and iron
- » Targets people who eat large amounts of staple foods daily and who mostly live in rural areas
- » Offers a one-time research investment to develop crops; recurrent costs are low



# BIOFORTIFIED CROPS FOR ZAMBIA



**Provitamin A  
Maize**

**2012**



**Provitamin A  
Sweet Potato**

**2012**



**Iron (Zinc)  
Beans**

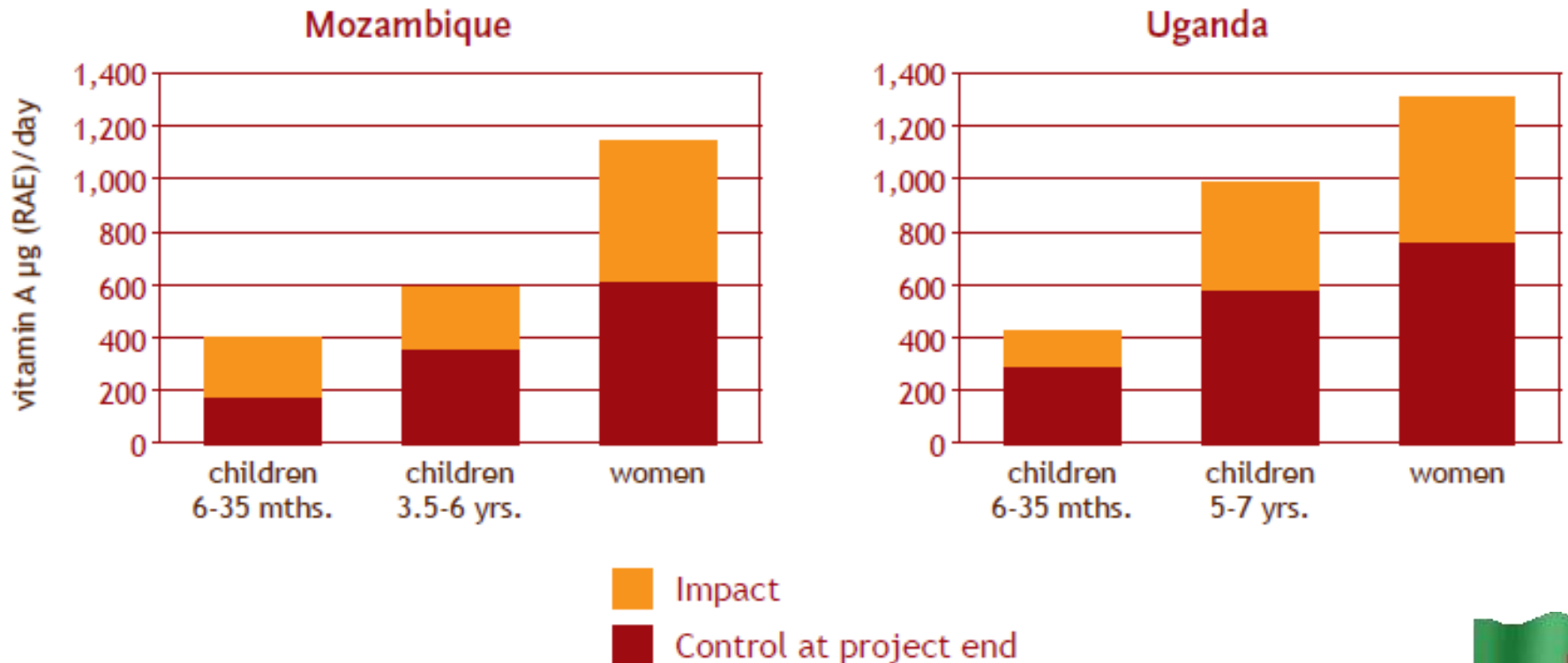
**2013**





# IMPACT OF PROVITAMIN A INTAKE

**FIGURE 5** Impact of REU Intervention on mean vitamin A intakes ( $\mu\text{g}$  Retinol Activity Equivalents (RAE)/day), Mozambique and Uganda



# COMMERCIALISATION OF ORANGE MAIZE IN ZAMBIA

**GV665A**

- **SEEDCO**
- **Tasked to produce 100mt in 2014**

**GV664A**

- **ZAMSEED**
- **Tasked to produce 100mt in 2014**

**GV662A**

- **KAMANO SEED**
- **Tasked to produce 50mt in 2014**



# ACTORS IN VITAMIN A MAIZE VALUE CHAIN

FROM RESEARCH

Partnerships with  
MAL, MoH, MoE,  
Com Dev, NGOs

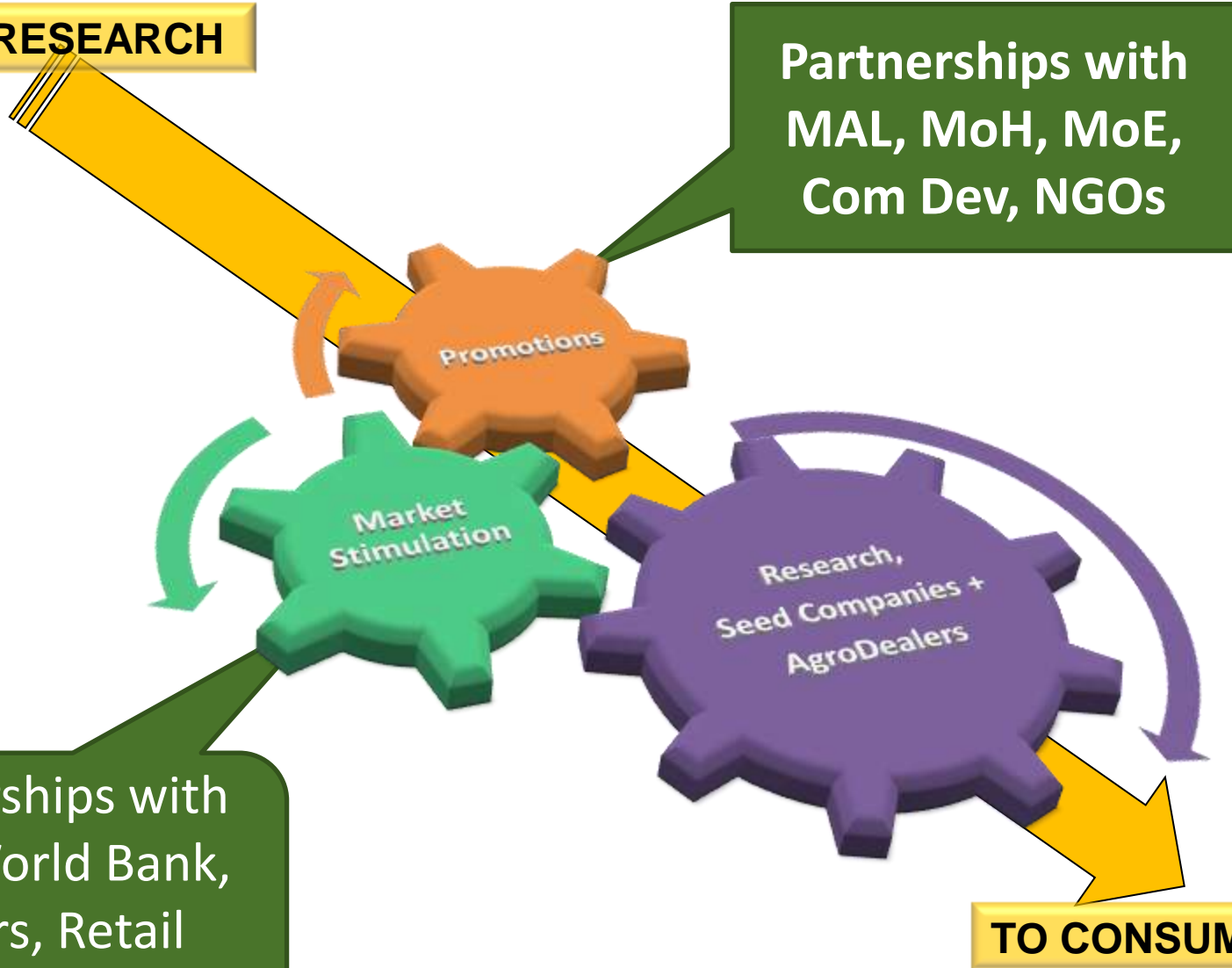
Promotions

Market  
Stimulation

Research,  
Seed Companies +  
AgroDealers

Partnerships with  
WFP, World Bank,  
Millers, Retail  
shops

TO CONSUMPTION



# DELIVERING BIOFORTIFIED CROPS

## AREAS OF COLLABORATION

- » Advocacy and promotional campaigns for scaling up nutrition
- » Policy analysis and formulation
- » Delivery of services, e.g. linking farmers to markets post harvest handling etc
- » Implementation of government and donor funded projects
- » Knowledge and information sharing and dissemination
- » Mobilization of resources to address/resolve malnutrition



# LESSONS LEARNED, CHALLENGES OPPORTUNITIES & RECOMMENDATION

- » Consumption patterns and attitudes for new crops are a difficult to change. Using diverse sources information (NGOs, Public, Private, CBOs etc) works better.
- » Even rural populations respond to nutrition information.
- » Multi-stakeholder collaboration across private, public and NGO sectors is crucial to drive adoption of nutritious crops.



# BIOFORTIFIED CROPS WELL RECEIVED BY USERS

**At least** 100,000 farmers growing  
and consuming by 2015

