

# Theory of change for HarvestPlus delivery: 3 crop x country examples

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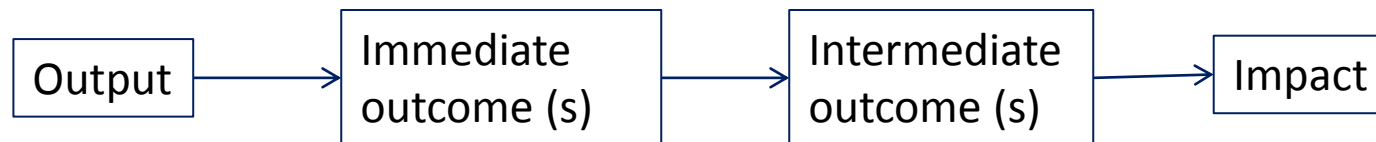


# Outline

- What is theory of change (ToC)?
- Why TOC in CRPs in general and in HarvestPlus, specifically?
- Draft ToCs for 3 crop x country examples and main messages to date
- Conclusion and discussion

# What is theory of change?

- Explains **how** the activities of the intervention are expected to lead to the desired impacts
- Includes:
  - Diagram showing pathway(s) from activities to **outputs** to a sequence of **outcomes** to **impacts** (boxes)
  - **Narrative** explaining **why** the various **links** in the pathway are expected to work (arrows)
    - Narrative contains assumptions, risks, and related evidence



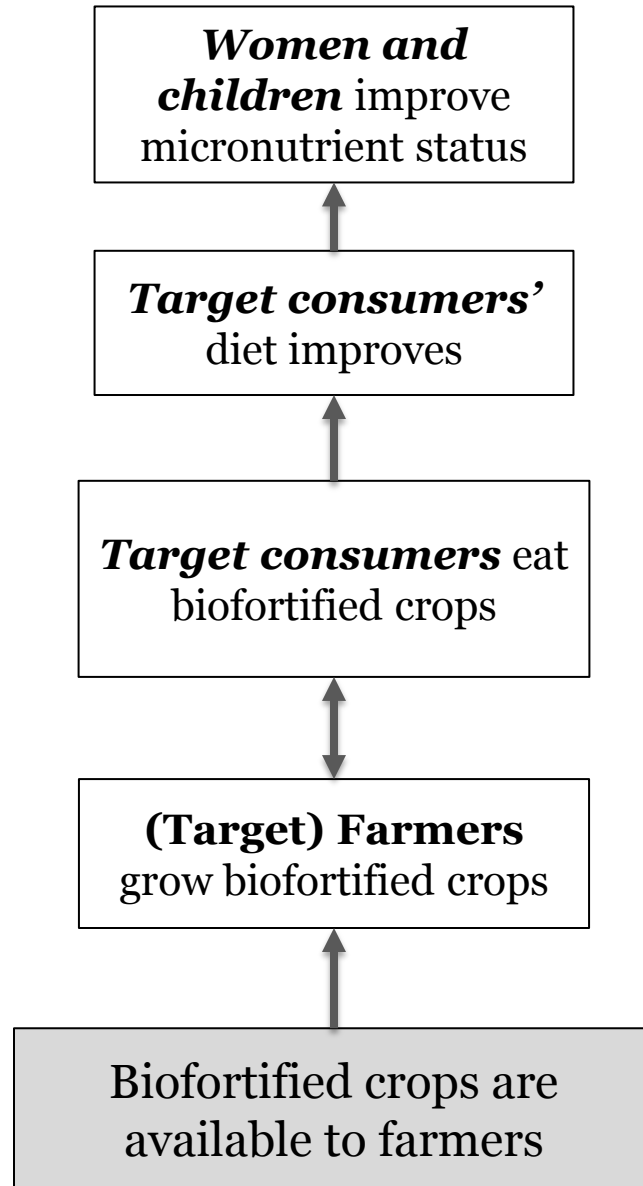
# Why theory of change in CRPs?

- With the significant focus in the CGIAR on making a difference in the development agenda, there is a need for CGIAR research programs to understand and be able to **explain how their research efforts are expected to contribute** to development impacts.
- As CGIAR research programs focus on making an impact with their research they need to be able to **monitor their progress along the pathways they are using**
  - See if on track, make changes along the way
- CGIAR research programs are setting ambitious intermediate development outcomes targets over the next 10-15 years. They will need **to show that they have indeed contributed to these development outcomes.**

# TOC in HarvestPlus

- Biofortification expects to **have impact** through multiple, mutually reinforcing pathways:
  - Phase 3 delivery in target countries
  - Policy influence (CRPs, countries, global) to sustain and scale up impacts
  - Relief and public health programs
- Each of these pathways should have its own TOC
- This presentation focuses on the TOC for Phase 3 delivery
  - **3 crop x country combinations**
    - Maize in Zambia
    - Beans in Rwanda
    - Cassava in Nigeria
- These TOC provide **at-a-glance snapshots** of delivery strategies and activities that can be used to **communicate with external stakeholders**

# Primary pathway for HarvestPlus

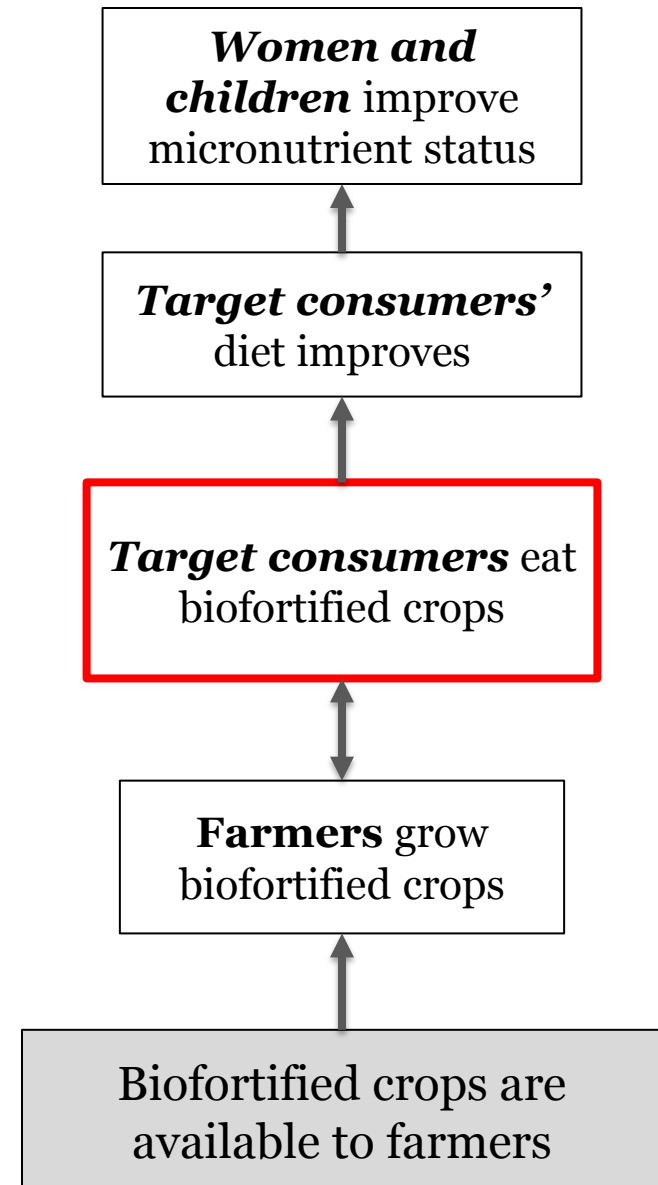


# HarvestPlus's target beneficiaries

- If overall goal is **improved micronutrient status of women and children** and main mechanism is **consumption within producing households**

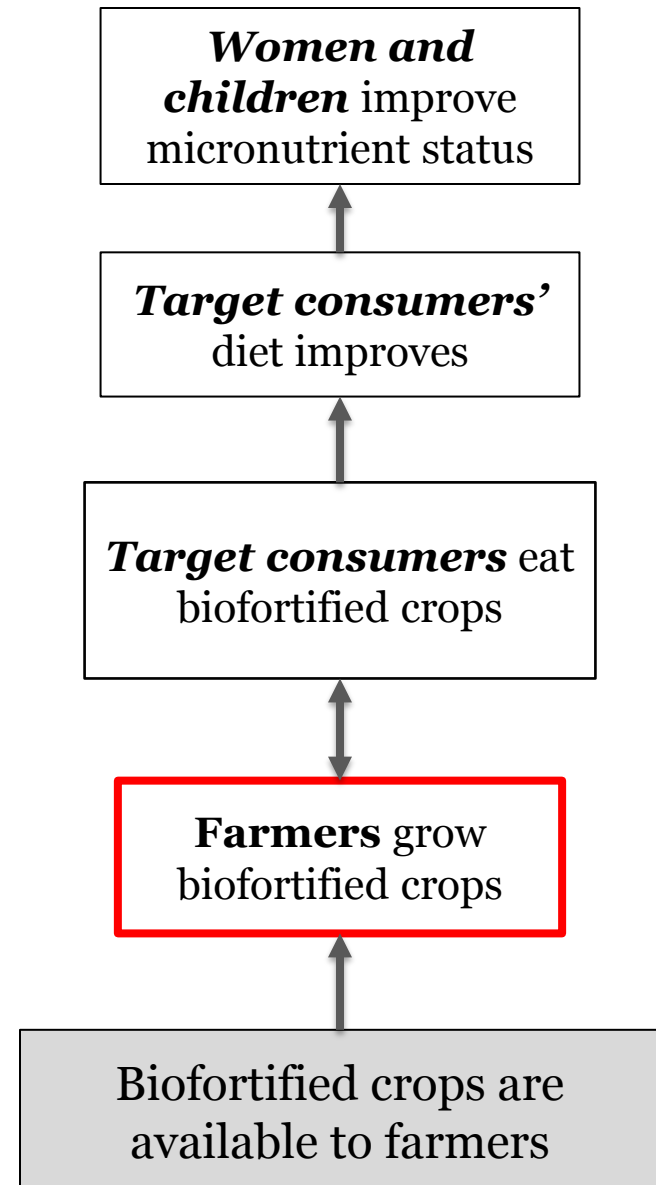
⇒ **Target consumers** are women and children in producing households.

- Is this where the micronutrient deficient population is?
- Should specific types of farm households be targeted by HarvestPlus?



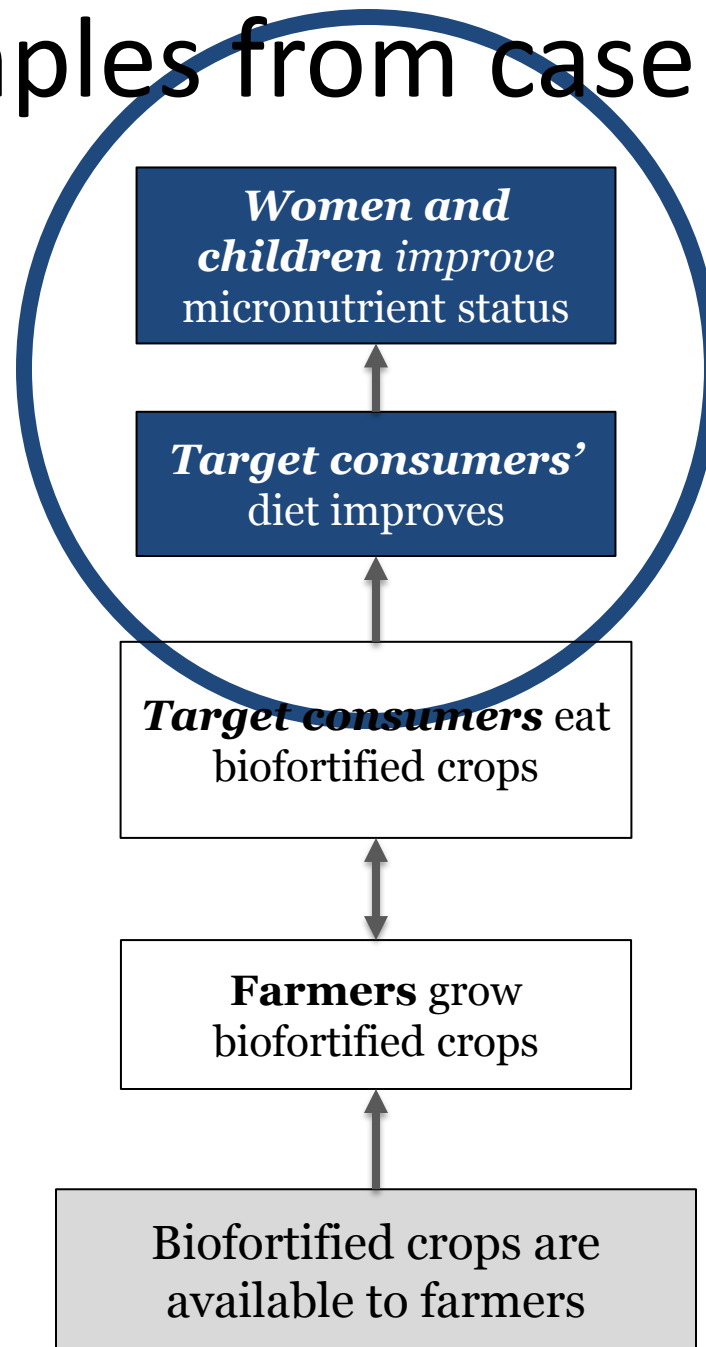
# What to measure in Phase 3?

- In Phase 3 (Delivery), key outcome indicator is **farmer adoption**
  - Makes sense given that farmers will be trying out the new material and may not get to meaningful levels of consumption
- But **need to embed adoption** in overall program pathway and theory
  - Is program reaching households of target consumers?
  - Within those households, is adoption likely to lead to consumption by target consumers?

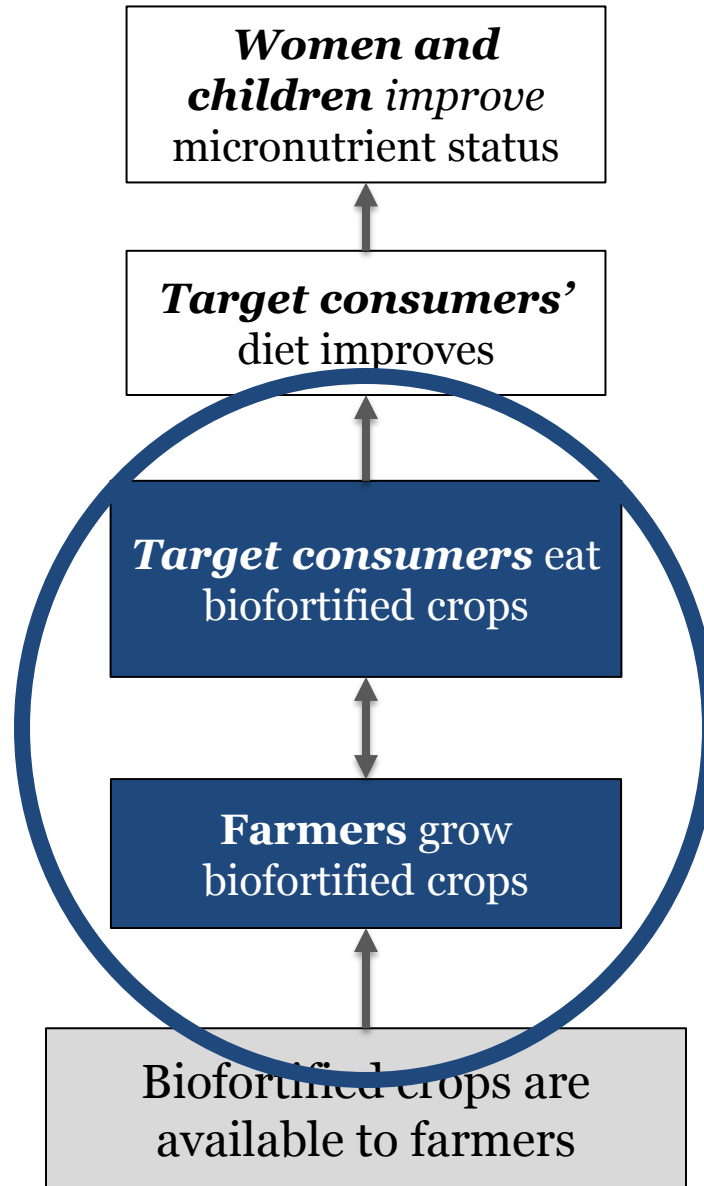




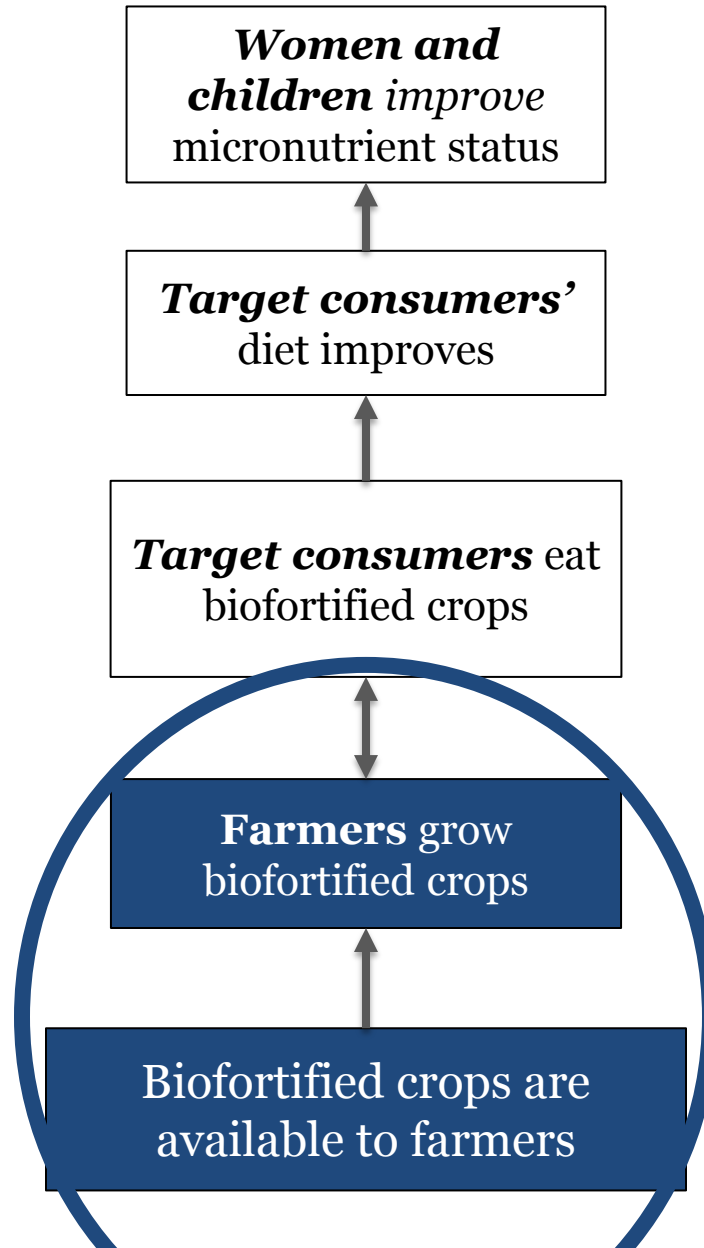
# Examples from case studies



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# From consumption to better nutrition and health (Zambia)

## **Assumptions/risks**

Consumers do not have underlying health conditions that prevent micronutrient absorption.

Beta-carotene in orange maize converts to usable vitamin A in the body when eaten (bioavailability).

## **External factors**

Improved fortification and supplementation programs decrease the prevalence of vitamin A deficiency among target consumers.

**Target consumers'**  
vitamin A status improves

**Target consumers'** diet  
(vitamin A intake) improves

**Target consumers** eat  
orange maize

## **Assumptions/risks**

Current dietary intake is inadequate.

Retention of beta-carotene does not fall short of estimated amounts, given typical storage, processing, and cooking methods.

Orange maize is eaten in sufficient quantities throughout the year.

No other changes in diet apart from substitution of orange for white maize.

## **External factors**

Other agricultural programs or broader economic development lead to better diets.

# Evidence on link from consumption to micronutrient intake

<b>Outcome: Consumption improves micronutrient intake</b>	Impact evaluations will give high quality evidence but in specific location(s).
Current dietary intake is inadequate	Vitamin A deficiency affects 48 percent of Zambian children under five. Recent analysis estimates that 83 percent of the rural population in Zambia does not get enough vitamin A in their diets (Fieldler and Lividini 2013).
Retention of beta-carotene does not fall short of estimated amounts, given typical storage, processing, and cooking methods.	Studies revealed storage and processing losses to be higher than anticipated, but they were offset by higher than expected bioconversion levels. <b>Storage times and processing methods from target households could be confirmed in effectiveness studies or farmer feedback studies.</b>
Beta-carotene in orange maize converts to usable vitamin A in the body when eaten (bioavailability)	Studies found bioconversion levels to be higher than originally anticipated—lab and potential efficacy trials

# Evidence on link from consumption to micronutrient intake

Orange maize is eaten in sufficient quantities throughout the year	Breeding targets for beta-carotene levels in maize were set based on data on current maize consumption levels by target consumers (women and children ages 2-5) and expected processing losses. <b>Data on consumption of yellow maize will be collected in impact evaluations. Data on sale/purchase of orange maize from farmer feedback study could give an early indication.</b>
No other changes in diet apart from substitution of orange for white maize	<b>Data on full diet will be collected as part of effectiveness studies. Farmer feedback or other low cost methods could be used to get an early indication, or to get information from other locations</b>

# External factors

- Two important hypotheses are used to make the case for HarvestPlus, namely that biofortified varieties can reach people who are:
  - unlikely to be reached cost-effectively by other nutrition interventions (rival explanation for observed improvements in micronutrient status)
  - unlikely to benefit in the short term from broad-based economic growth (rival explanation for observed improvements in dietary micronutrient intake)
- These are very compelling arguments in favor of HarvestPlus, but they need evidence and imply that deliberate strategies will be required to identify and reach target households since they are, by definition, hard to reach through conventional channels.

# Rwanda: From adoption to consumption

## **Assumptions**

Women in target households make decisions about diets and have access to iron-rich beans.

Children willing to eat them.

Iron-rich beans have same or better taste and cooking qualities.

## **Risks**

Mixing of varieties since iron is an invisible quality and cannot be distinguished except for effective packaging.

Farmers sell majority of iron-rich beans grown for increased income and buy cheaper beans for home consumption.

Men take over control of bean production from women due to income potential.

*Beneficiary Behavior change - **Target beneficiaries** eat iron-rich beans*

*Beneficiary capacity change - **Target beneficiaries or the people who make decisions about their diets** are aware of and appreciate the benefits of iron-rich beans*

*Behavior change – **Target farmers** adopt iron-rich beans*

## **Assumptions /risks**

Targeted farmers are those that have the target beneficiaries in their households.

Right people within the household are reached with the right kind of information

## **External**

Other health and nutrition messaging from outside H+ influences target beneficiaries

Marketing and public relations



# From knowing iron-rich beans are healthy to serving and consuming them: what is the evidence?

<b>Outcome: Target beneficiaries eat iron-rich beans</b>	Will be covered in effectiveness studies but could do more focused studies to confirm
Women in target households make decisions about diets and have access to iron-rich beans.	
Children willing to eat them.	Consumer preference studies
Iron-rich beans have same or better taste and cooking qualities.	Evidence from consumer preference studies and lab analyses

# Nigeria: From stem availability to adoption by farmers

## **Assumptions**

Farmers who receive free stems willing to experiment with them

Farmers trust the source from which they receive planting material and have no negative reaction to the new packaging of stems.

Farmers who receive free stems share it with neighbors and friends.

Yellow cassava continues to deliver high yields and resistance to disease and pests in farmers fields.

No or low additional inputs required, including labor.

Market for surplus exists and price is reasonable.

## **Risks**

Farmers unwilling to try new variety, particularly in areas where farmers typically only grow one variety.

*Behavior change -*  
**Farmers** adopt yellow cassava

*Capacity change -*  
**Farmers** understand and appreciate the agronomic and health benefits of yellow cassava

Marketing and public relations

## **Assumptions**

Messages are accurate, targeted, and clear to people who make decision about varietal adoption in farm households.

Channels for reaching household members who make decision about varietal adoption are effective.

Farmers in poorest and most malnourished households are reached.

Members of adopting households share information and positive experiences with other cassava-growing households.

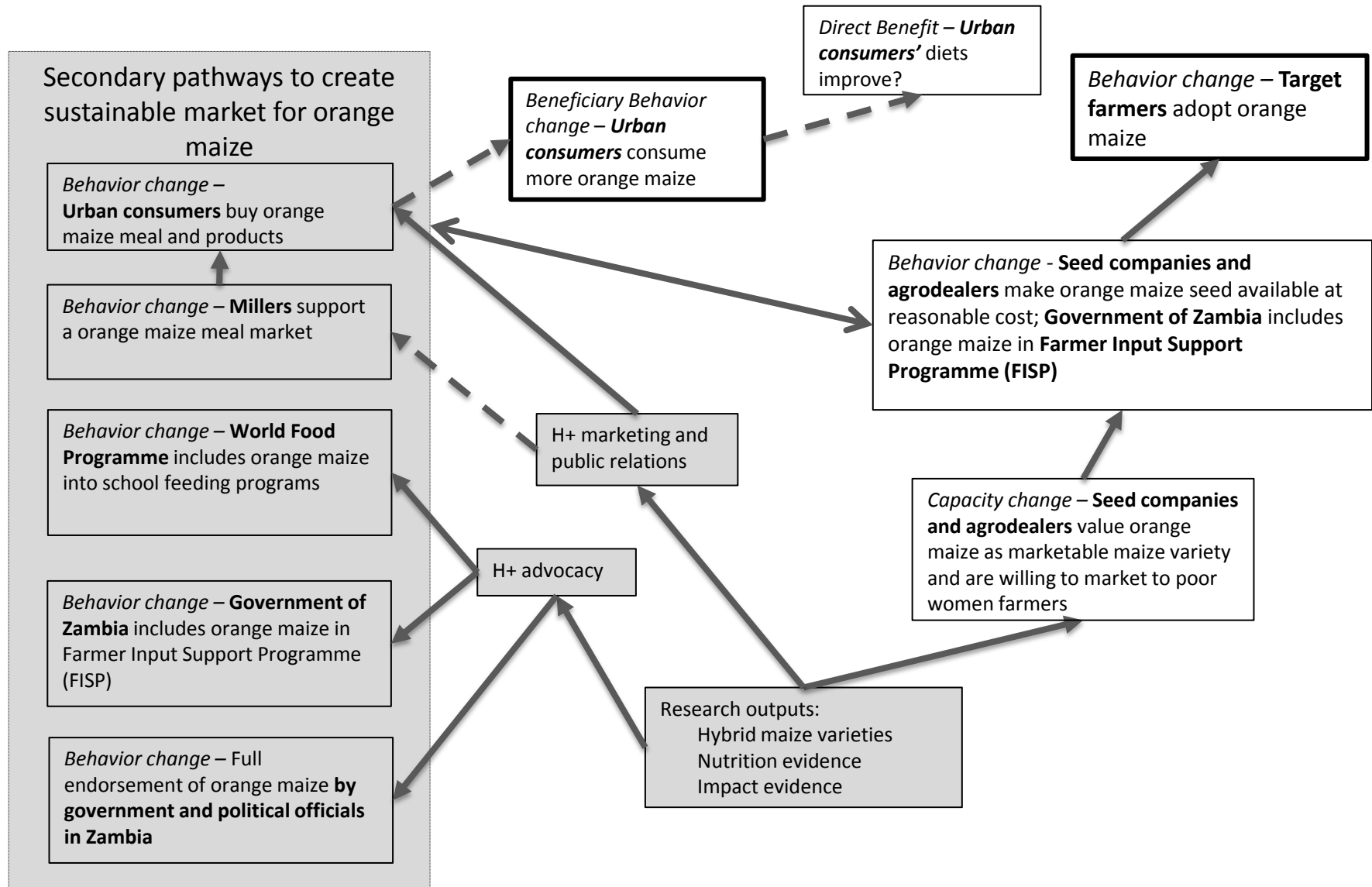
## **External factors**

Other cassava programs (such as Presidential Initiative on Cassava)

# From knowing the benefits of the biofortified crop to planting it on your farm: what is the evidence?

<b>Outcome: Farmers adopt yellow cassava</b>	Farmer feedback studies
Farmers who receive free stems actually plant and grow yellow cassava.	<div>Farmer feedback studies could address many of these issues, but maybe not all and maybe not for a big enough sample. Evidence from past adoption studies of non-biofortified crops could give some insights on where poor farmers have been reached and where they haven't.</div>
Farmers trust the source from which they receive planting material and have no negative reaction to the new packaging of stems.	
Farmers who receive free stems appreciate the qualities of yellow cassava and share it with neighbors and friends.	
Yellow cassava continues to deliver high yields and resistance to disease and pests in farmers fields.	
No or low additional inputs required, including labor.	
Market for surplus exists and price is reasonable.	

# Zambia: How to ensure sustainable seed availability?



# Conclusions

- While HarvestPlus didn't have an explicit TOC, there was “TOC-thinking” in phases 1 (Discovery) and 2 (Development) of HarvestPlus resulting in a **solid evidence base** for some of the key links in the impact pathway.
- However, **there are gaps**, especially related to targeting of households and decisionmaking within farm households.
- **Phase 3 is a good opportunity to address these** (would have been harder before varieties were actually available to deliver in large quantities).
- There is a risk that because of the Phase 3 focus on adoption the need to **link adoption to the bigger goals of diet and micronutrient status** will get lost—but the TOC can help make sure this doesn't happen.

# Thank you for your time!

