

**ORANGE FLESHED
SWEETPOTATO ADOPTION
IMPROVED DIETARY QUALITY:
EVIDENCE FROM WOMEN AND
CHILDREN IN WESTERN KENYA**



Sweetpotato Action for
Security and **Health** in **Africa**

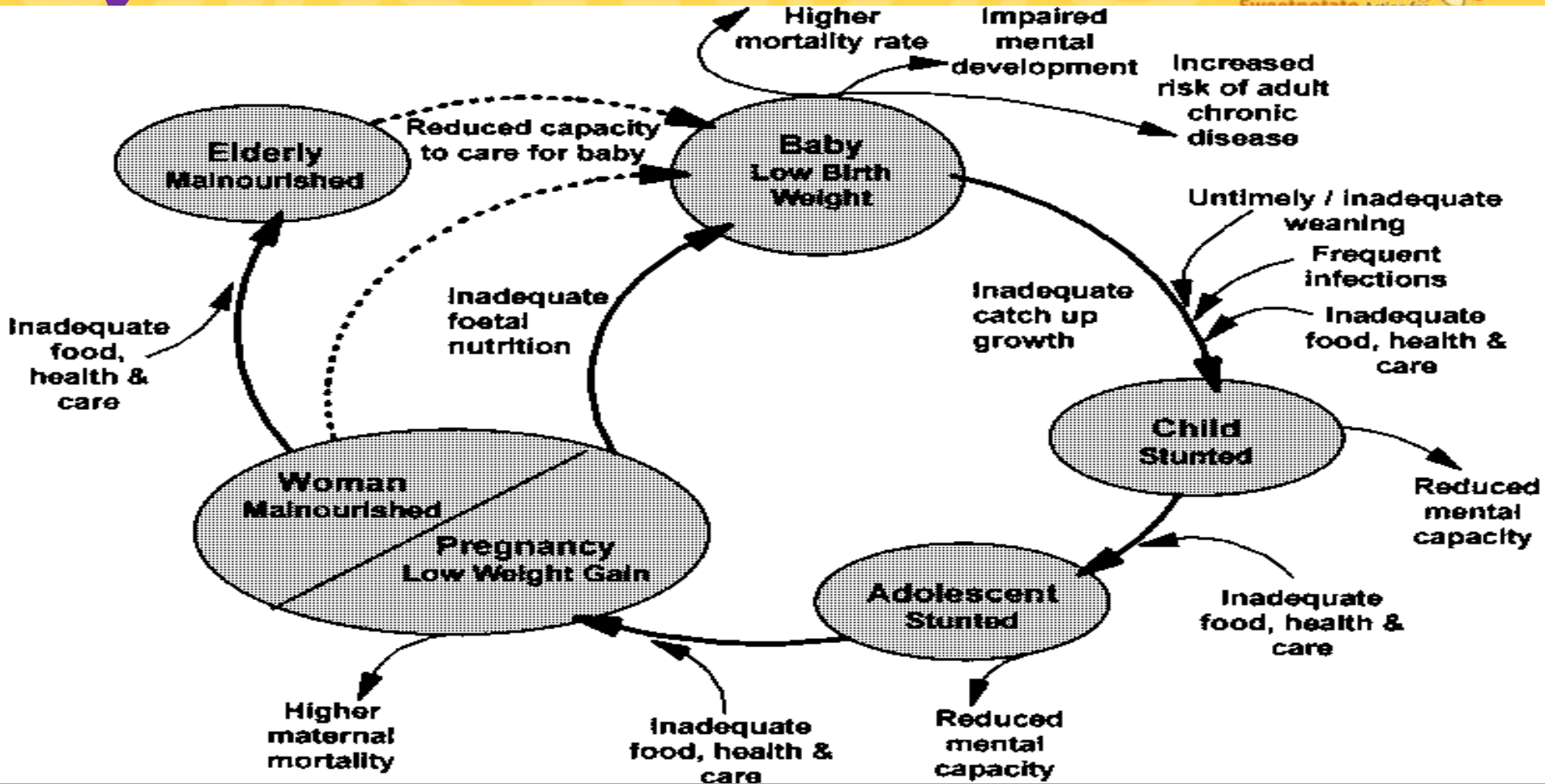
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- ❖ It is reported that in 2014-2016, about **795** million people of the 7.3 billion people in the world, or one in nine, were suffering from **chronic undernourishment**.
- ❖ **780 million** of **795** million, live in developing countries, representing **12.9** percent, or one in eight, of the population of developing countries.
- ❖ In Africa 220 million (23.2%) undernourished
- ❖ Stunting rates are dropping globally, more than **one third of all stunted children under 5 lived in Africa** and the number of stunted children under 5 in Africa is rising (UNCIF, WHO, and WB 2015)).

- Vitamin A deficiency (VAD) contributes significantly to blindness, disease, and premature death
- Young children and pregnant or lactating women are particularly at risk of VAD (*Black et al.. 2008; World Bank 2006*).
- Children can receive micronutrients from foods, food fortification, and direct supplementation.

Effect of Poor Nutrition Throughout the Life Cycle

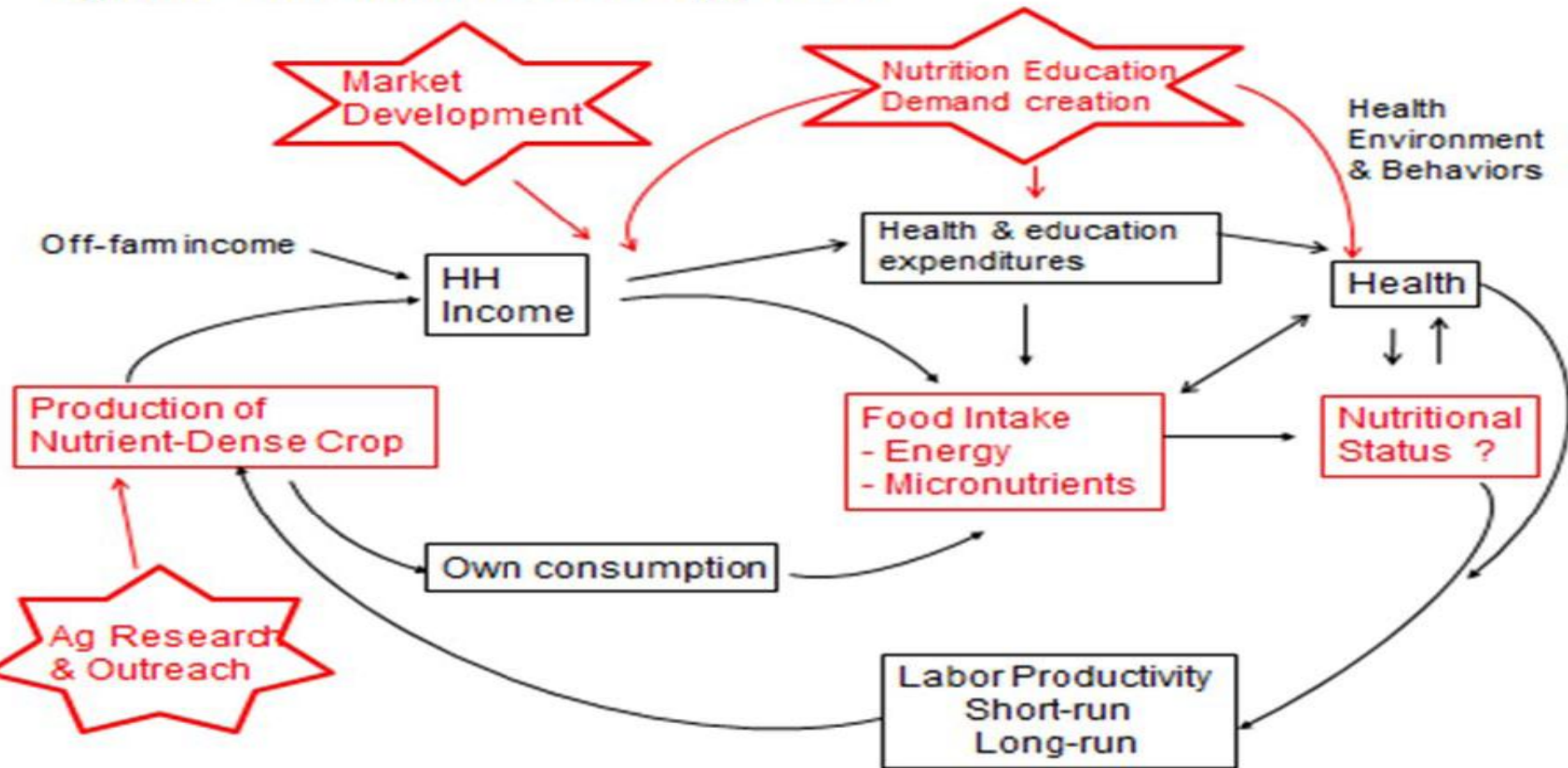


Source: Prepared by Nina Seres for the ACC/SCN-appointed Commission on the Nutrition Challenges of the 21st Century.

An integrated agriculture-nutrition approach at the community level using OFSP production and consumption have shown significant positive impact on Vitamin A intake and status?

Agriculture nutrition linkage

Figure 3: The Biofortification Approach



Key Questions



- Does OFSP adoption improve mother and child dietary diversity?
- Does OFSP adoption improve intake of vitamin A rich foods ?
- What factors influence DDS and frequency of vitamin A rich food consumption ?

- ❑ **2,271** mother-child pairs (children <24 months of age) were randomly selected for lists of eligible applicants in **four intervention areas and four control areas**.
- ❑ Dietary diversity (**9 food groups consumed in the previous 24** hours) and frequency of consumption of vitamin A-rich foods during the seven days prior to the interview.
- ❑ **Two-stage instrumental variable and ordered logit regression models were employed to test the role of OFSP adoption and adoption intensity on food indices.**
- ❑ Diagnostic tests for endogeneity and misspecification were conducted to confirm model validity.

Description of Study Participants



Woman

- 59% male, 41% female
- Mean age of head **38** years
- Formal education of the head **8.6** years
- Growing sweetpotato **66%**
- Agriculture as primary activity 95%
- Casual labor **53%**
- Salaried employed 21%

Children

- 52% (1,181)male, 48%(1,091) female
- Age **14.3** months
- Stunted **25%**
- Under weighted **10%**
- Wasting **2%**

Food categories consumed...WDDS



Food category	% eating
Starchy staples	91%
Dark green leafy vegetables	80%
Milk products	80%
Other fruits and vegetables	58%
Meat and fish	32%
Legumes	31%
Fruits and vegetables rich in vitamin A	26%
Egg	11%
Organ meat	2%

Components of woman dietary diversity by adoption level

Food category	Grow OFSP		Total (N=2271)	P-value
	No (n=1631)	Yes (n=640)		
Woman dietary diversity				
Starch staples (%)	0.89	0.94	0.91	0.000
Dark green leaves (%)	0.79	0.82	0.80	0.149
VA-fruits and vegetable (%)	0.19	0.45	0.26	0.000
Other fruits and vegetable (%)	0.55	0.64	0.58	0.000
Organ meat (%)	0.02	0.02	0.02	0.702
Meat and fish (%)	0.33	0.30	0.32	0.136
Egg (%)	0.10	0.13	0.11	0.103
Legumes (%)	0.30	0.34	0.31	0.065
Dairy products (%)	0.77	0.87	0.80	0.000

Food category	Grow OFSP		Total (N=2271)	P-value
	No (n=1631)	Yes (n=640)		
Child dietary diversity				
Grain, roots, and tuber (%)	0.81	0.88	0.83	0.000
Legumes and nuts (%)	0.25	0.28	0.26	0.083
Dairy products (%)	0.76	0.85	0.78	0.000
Flesh foods (%)	0.22	0.17	0.2	0.008
Egg (%)	0.09	0.13	0.1	0.004
VA-fruits and vegetable (%)	0.55	0.59	0.56	0.151
Other fruits and vegetable (%)	0.52	0.61	0.54	0.000
Biofortified staples (%)	0.02	0.29	0.09	0.000

Difference in household characteristics by adoption



Variables	Grow OFSP				A-B
	No		Yes		
	A		B		
	Mean	Stand. error	Mean	Stand errors	
Household Dietary Diversity	4.36	1.30	5.00	1.35	-0.64***
Wealth Index	12.03	4.21	13.11	4.41	-1.08***
Total vitamin A food frequency	6.05	4.00	6.73	4.58	-0.68***
Nutrition Knowledge score	4.51	2.57	5.43	2.93	-0.92***
Vitamin A knowledge score	2.84	1.71	3.75	1.73	-0.91***
Health care Knowledge score	5.74	1.61	6.21	1.64	-0.48***
Child Health care score	9.08	2.51	9.87	2.50	-0.80***
OFSP knowledge	3.20	1.81	4.55	1.75	-1.35***
# adults involved in agriculture	2.12	0.96	2.20	0.86	-0.08
Age of head in years	23.82	6.35	23.40	5.36	0.42
Head education	8.51	3.60	8.96	3.57	-0.45**
Head is female	0.06	0.24	0.05	0.22	0.01
Tropical Livestock unit	0.86	1.34	1.03	1.27	-0.17**
Total Land Size (acres)	1.28	2.46	1.43	1.69	-0.15
Have low land area	0.18	0.38	0.15	0.35	0.03
Got vines from SASHA	0.36	0.48	0.86	0.35	-0.49***
Participated in pregnant women club	0.03	0.16	0.36	0.48	-0.33***
Participated in lactating women club	0.02	0.13	0.24	0.43	-0.22***
Heard of SASHA on radio	0.62	0.48	0.94	0.24	-0.31***
Heard of OFSP on radio	0.19	0.39	0.35	0.48	-0.17***
Number of SP fields	0.87	0.62	1.24	0.50	-0.38***
Observations	1631		640		2271

Instrumental variable analysis: the impact of OFSP adoption



	Woman Dietary Diversity	Child Dietary Diversity	Woman VA-intake	Child VA-Intake
Grow OFSP? (=1 Yes, =0 No)	0.13 (0.11)	0.35*** (0.12)	0.10 (0.38)	0.26 (0.39)
Age of head in years	0.01** (0.00)	0.01** (0.00)	0.02 (0.01)	0.01 (0.01)
Age in Years, Caregiver	-0.00 (0.00)	0.01*** (0.00)	-0.04*** (0.01)	-0.02** (0.01)
Mother education in years	0.03*** (0.01)	0.02* (0.01)	0.08*** (0.03)	0.07** (0.03)
Mother engaged in casual (=1 Yes, =0 No)	0.05 (0.05)	0.05 (0.06)	-0.26 (0.18)	-0.37** (0.18)
Number of adults engaged in agriculture	-0.09*** (0.03)	-0.09*** (0.03)	-0.37*** (0.10)	-0.37*** (0.10)
Wealth index (Minimum=0 and maximum=55)	0.06*** (0.01)	0.05*** (0.01)	0.19*** (0.02)	0.20*** (0.02)
Number of sweet potato fields	0.11** (0.04)	0.14*** (0.05)	0.32** (0.15)	0.33** (0.16)
Does household have a radio? (=1 Yes, =0 No)	0.18*** (0.07)	0.06 (0.08)	0.22 (0.23)	-0.07 (0.24)
Distance to closest DVM (KM)	-0.01*** (0.00)	-0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)
Participated in a mothers' club (=1 Yes, =0 No)	0.40*** (0.10)	0.30*** (0.11)	1.02*** (0.34)	1.19*** (0.35)
Constant	2.85*** (0.17)	2.00*** (0.19)	4.23*** (0.59)	3.04*** (0.61)
Observations	2269	2269	2269	2269
Adjusted R ²	0.13	0.09	0.07	0.07
chi ²	339.98	227.14	189.39	183.41

RESULTS



- ❑ Women and children in households growing OFSP have **15%** and **18%** higher diet diversity scores, respectively, than those not growing.
- ❑ **10%**, and **20%**, higher for women and children in OFSP producing households, respectively, than those in households not producing OFSP.
- ❑ **Age of household head, mother's education, wealth index, and the number of plots under sweetpotato production** have a significant and positive effects on the dietary diversity and frequency of vitamin A intake score.
- ❑ **Distance to health facility, number of adults, mother engaged in casual labor** were more likely to have less and having the diversified diets and lower frequencies of consumption of vitamin A rich foods.
- ❑ Both of **OFSP adoption** and the **share of OFSP** in total sweetpotato area have significant and positive influence on **dietary diversity** and **frequency of vitamin A intake scores** for both women and children under two years of age in Western Kenya.

THANK YOU