Malawi: Scaling Biofortification through Home-Grown School Feeding

Author: Dellings Phiri, Country Manager, HarvestPlus Malawi



Biofortified crops with value chain activities: **Iron Bean, Vitamin A Maize, Vitamin A Orange Sweet Potato**

Biofortified crop varieties currently available in Malawi

Vit A Maize	Iron Bean	Vit A Orange Sweet Potato	Vit A Cassava
MH39A	MUA35	Zondeni	Chamandanda
MH40A	NUA45	Chipika	
MH42A	NUA59	Anaakwanire	
MH43A		Kadyaubwerere	
MH44A		Matutu	
MH45A		Kaphulira	
MH46A		Royal	
MH47A		Msungabanja	
MH48A			
MH49A			

Crops with potential for release in Malawi: zinc rice, zinc maize

Donors and key projects in Malawi

Donor	Project	Dates
The Government of Canada	An Integrated Food Systems Approach to Build Nutrition Security	Jan 2021-Sep 2022
The Waterloo Foundation	Malawi Biofortified Food Basket School Feeding Program	April 2022-Dec 2023
The Rockefeller Foundation	Good Food Project (School Feeding)	Expected Oct 2022-Sep 2025
The Japanese Social Development Fund via the World Bank	Adolescent Nutrition Sensitive Agriculture	Oct. 2018-Sep 2021
The UK Foreign, Commonwealth and Development Office (FCDO); The Bill and Melinda Gates Foundation; The John D. and Catherine T. MacArthur Foundation	Core Funders	Various

Delivery model steps and activities

Commercial delivery model

- Variety testing (2-3) with DARS
- Allocating released varieties to seed companies
- Building capacity in seed companies to produce early generation seed, foundation seed, certified seed, and market seeds
- Promoting seed varieties to farmers through demo plots, variety promotion (adverts and joint campaigns)
- Facilitating uptake of seed through Affordable Seed Input program
- Training farmers in crop production
- Linking farmers produce to good off takers market
- Building capacity in SMEs to do value addition
- Promoting value-added products through utilization campaigns, product promotions, etc.

Social development delivery model

- Through government- or donor-funded projects
- Engaging donors
- Identifying impact areas and beneficiaries
- Training beneficiaries on crop production techniques

Capacitating partners to supply seeds

- Training beneficiaries in nutrition education
- Training beneficiaries in utilization (recipes, preparation)
- Conducting monitoring and evaluation to measure impact

Commercial value chain activities

1. Agricultural research

- Breeding pipeline includes three varieties of cassava, vitamin A maize or iron beans
- New varieties of vitamin A maize and iron beans are required to replace or complement existing ones

2. Seed and Vine release

- Variety testing and release
- Early generation production by the Dept. of Agricultural Research Services (DARS), seed companies and HarvestPlus

3. Commercial seed production

- Procurement of foundation seed
- Capacity building in seed production
- Backstopping seed production
- Seed certification by Seed Services Unit (DARS unit)
- Warehousing

4. Farming / growing

- Extension in crop production
- Training of field officers in crop production
- Demonstration plots to showcase varieties

4a. Fertilizers and agronomic biofortification (including scope or demand)

- Fertilizer companies, chemical companies, and NGOs provide extension services on good agricultural practices.

5. Aggregation

- Less than 20 firms are engaged in aggregation of VAM and iron bean; these include food processing companies, feed processing companies, and humanitarian relief organizations

6. Milling

- Individual hammer millers and large milling companies mill VAM into breakfast meal, flour, feed and children's foods

7. Processing

- Large processing companies process VAM into super meals and children's meals

8a. Retailing

- Agrodealers sell retail seed on behalf of seed companies; retail outlets and supermarkets retail biofortified processed food products

8b. Public procurement (schools, hospitals, safety net schemes)

- NGOs, humanitarian organizations, and public institutions buy irons beans and vitamin A maize flour for school meals

9a. Consumption on farm

- Households produce biofortified crops solely for their own consumption
- Treat and store for biofortified crops for future consumption
- Use local recipes and prepare food using their own practices

9b. Commercial Food consumption (by all population)

- Large firms process vitamin A maize and vitamin A orange sweet potato into flour products, bread, etc., and market the products through supermarkets

9c . Consumption from institutional settings (Schools, hospitals)

- Hospitals procure vitamin A maize and iron beans straight from producers and aggregators and mill the grain themselves
- Schools procure grain from farmers and aggregators and process it into flour themselves
- Humanitarian organizations procure grain from aggregators and distribute to vulnerable communities.

Non-commercial value chains, conflict, or fragile environments

Integration of nutrient enriched crops (NECs) in food security and nutrition programmes, including in fragile and conflict-affected settings mostly targeted at producer households and/or people served by public institutions.

A package comprising VAM and beans sufficient for five household members for four months (lean months of January to April). This translates to six bags of 50kgs of VAM and 75kgs of Iron beans.

	Value chain step	Activities
2	Seed and vine release	• Supported the beneficiaries with a starter park of 2kg maize and 2kg beans, 5 vines. • Pass on beans to others in second year (ANSA Project).
3	Seed production	• Supported community seed production and seed banks (ANSA Project).
4	No commercial seed/vine dissemination to farmers	• Built capacity of lead farmers to produce vines which can also be shared with other farmers (HarvestPlus Program).
5	Farming / growing	• Free extension to farmers/field staff to produce biofortified crops and store the harvest (ANSA project and GAC).

	Value chain step	Activities
6	Access to markets and steps taken improve livelihoods	• Linked farmer groups to markets or market information (GAC project).
7	Access to public procurement mechanisms (e.g. emergency programmes, food aid, etc.)	• Supported vulnerable communities with NECs (such as vitamin A maize)) via the GAC Project.

Other agricultural activities and points of consideration

Promotion of Agro-biodiversity

- Advocating for integrated pest control management (ANSA Project)
- Promotion of climate smart agriculture (HarvestPlus core program)
- Promotion of conservation farming (GAC Project)
- Promotion of intercropping (ANSA Project)

Soil health monitoring and improvement

- Promotion of manure in farming (ANSA Project)
- Practicing rotation between cereal crops and legume crops (GAC/ANSA Project)
- Application of soil specific fertilizers (GAC project)

Seed quality

- Backstopping seed production to enhance seed quality during seed production (GAC Project)
- Advocating for use of certified seed (HarvestPlus core Program)
- Capacity building of agro-dealers to market seed on behalf of seed companies (GAC Project)

Policy, advocacy and enabling activities for biofortified crops

Activity	Summary
Government advocacy and engagements	• Working with government partners for policy inclusion • IFI engagement • Biofortification champion building • Review of policy documents
Policy inclusion (list all relevant policies agriculture and nutrition)	• National Agriculture Policy • Multisectoral Nutrition Policy • Integrated School Health and Nutrition Policy • Micronutrient Strategy • Vision MW2063 • National Agriculture Implementation Plan (NAIP)
Standards and regulations	• Food labeling (regulatory mapping required) • Standardization (Publicly Available Specifications)
Market research	• Consumer research • Demand research on seed/varieties • Market share of BF crops • Sensory tests
Technology advancements	• Use of digital platforms to train farmers and sell produce (GAC project)
Data collection	• We collect data on a quarterly basis to document program successes, but also collect baseline and endline data for all projects implemented
Gender and inclusivity	• Development of women-owned SMEs • Promotion of gender-sensitive technologies

Monitoring and evaluation, reach in 2022

Current M&E

Baseline studies for projects
Mid-term reports for projects
Endline studies for projects

Future Monitoring Targets

Nutrition indicators
Volume of BF crop processed
Number of value chain actors/partners engaged
New policies influenced
Number. of BF champions developed

Production: 2022

Seed Volumes: 133mt =125,000 HH	Grain Volumes: Figures TBD 23,000mt	Food products commercial: Figures TBD
Market share % =1, Figures TBD 3%	Market share: Figures TBD, 4%	Food Products institutional: Figures TBD,000 pupils

Consumer reach:2022

Households growing	VAM = <125,000; HIB= <375,000, OFSP = <1m
Off farm consumption	Vitamin A maize = <150,000; HIB =<500,000, OFSP = <600,000 households
Institutional consumption	VAM <5000mt; HIB, =<2000Mt, OFSP= <100,000mt

SWOT analysis – summary

Strength	**Weaknesses**
• Registered seeds for the three biofortified crops • Germplasm owned by the Govt. (i.e public gemplasm) • Climate-smart seeds • Currently produced and marketed by many seed companies • Some seed companies are now able to produce their own early generation seed (EGS)	• Awareness of biofortification still low • Behavior change challenges • EGS still low availability • Given this is public germplasm, multinational seed firms tend to shy away from investment in biofortified seeds.
Opportunities	**Threats**
• Donor interest in biofortification intervention • Demand for biofortification is on the rise • Biofortification is a cheaper intervention to invest in compared to supplementation and fortification • Work with large commercial seed companies to include nutrition traits in private sector breeding programs	• Interventions to tackle malnutrition can be viewed at competitive rather than complementary – biofortification, fortification, supplementation an dietary diversity all have a place

About the author: Dellings Phiri is the Country Manager for HarvestPlus Malawi and an experienced seed expert. Before joining HarvestPlus, Phiri worked with Seed Co Mw Ltd, Bayer Malawi, and the National Smallholder Farmers Association of Malawi (NASFAM).

These case studies were developed in collaboration with the FAO as part of a Letter of Agreement to create "Guidance and tools to promote nutrient enriched crops as part of healthy diets to address micronutrient deficiencies in vulnerable rural communities"