Food and Agriculture Organization of the United Nations

Global Forum on Food Security and Nutrition • FSN Forum

OPEN CALL

11.04.2017 – 05.05.2017

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Call for lessons and good practices on investments for healthy food systems

Template for submissions

(Approximately 1000 words in total)

CFS COMMITTEE ON WORLD FOOD SECURITY

Please use this **submission form** to share your examples and experiences on investments promoting healthy food systems for improved nutrition. For the necessary background and guidance, please refer to the topic note: www.fao.org/fsnforum/activities/open-calls/investments_healthy_food_systems

You can upload the completed form to the **FSN Fourm** www.fao.org/fsnforum or send it via email to fsn-moderator@fao.org.

Proponent

HarvestPlus

Title of case study: **Building Public-Private Partnerships for Scaling Up Biofortified Vitamin A Maize (VAM) in Africa**

Date/Timeframe and location

2014 – 2017: Zambia, Zimbabwe, Nigeria, Tanzania and Malawi

Main responsible entity

HarvestPlus

Nutrition context

Micronutrient malnutrition, also known as 'hidden hunger,' affects more than 2 billion people globally. One in three people lack essential minerals and vitamins in their diets, impacting their health and productivity. HarvestPlus works with partners to tackle hidden hunger on a global scale through a promising strategy known as biofortification using conventional breeding (i.e. non-GM) to increase the vitamins and minerals in everyday food crops. Together we build sustainable healthy food systems and bridge the gap between agriculture and nutrition. Varieties of biofortified staples are bred for desirable agronomic properties and marketability that match or outperform conventional varieties.

One of the biofortified staple crops released and disseminated to farm households and consumers in Africa is vitamin A maize (VAM), which is conventionally bred, and more nutritious than the conventional maize varieties. An efficacy study conducted in the Eastern Province of Zambia with children 5 to 7 years of age showed that after three months of consuming VAM, the children's total body stores of vitamin A increased significantly [i]. Another group working with the VAM showed that it improved children eyes' adaptation to darkness and low light [ii].

Key characteristics of the food system(s) considered

The maize food system is characterized by a complex supply chain and demand network comprising of seed producers, farmers, out-growers, seed companies, agro-dealers, food processors, wholesalers, retailers and consumers.

- Maize is the most important food staple in sub-Saharan Africa.
- It is particularly important in eastern and southern Africa, accounting for 54% of caloric intake in Malawi and 33% in Tanzania.
- In most countries, the vast majority of maize (>95%) is grown by smallholders under rain-fed conditions.
- Use of improved seed and fertilizer is not widespread. Many farmers reuse seeds from previous harvests.
- Milling industry consists of hundreds of small-scale mills serving rural areas and handful of large-scale mills serving urban consumers.
- The complex marketing channels are characterized by many small-scale under-capitalized traders; minimal storage capacity; few large trading enterprises with national/international operations and political sensitivity in maize prices.

To reach scale and sustainability, efficiently functioning value chains and markets for biofortified VAM seeds and foods must be built with private sector participation. Thus, HarvestPlus focused investments in building a sustainable value chain for VAM in Africa by developing public-private partnerships (PPPs) to effectively reach millions of farmers and consumers.

Key characteristics of the investment made

In building PPPs, market-based approaches are adopted to build the VAM value chain by developing efficient seed production and distribution systems where farmers and consumers access VAM through established seed and grain marketing structures. The goal of this effort is to reduce vitamin A deficiency among target population in Africa.

- HarvestPlus began by piloting the approach in Zambia building market networks with seed companies such as SeedCo and Zamseed to facilitate seed production. This enables the development and strengthening of commercial markets for VAM.
- HarvestPlus continues to drive the development of new lines of VAM varieties that exhibit better agronomic and nutrition traits than earlier released varieties. While commercialization of hybrid seed is the responsibility of the private seed companies, HarvestPlus assumes an active role in maintaining seed quality, improving seed distribution systems and promotions to enhance access to farmer.
- The efforts include a range of investments in capacity building, partnerships and policy/regulatory changes
- In addition, HarvestPlus led an advocacy effort to integrate VAM into the farm input subsidy program (FISP) on the supply side and food reserve agency procurement on the demand side. This provides an avenue to link the private seed companies with public programs as a strategy to establish PPPs for VAM seed and grain.
- To develop markets for VAM, HarvestPlus has initially supported the supply of seeds to agro-dealers at a subsidized price and contracted out-growers to procure VAM grain from farmers in three provinces. HarvestPlus led the effort to link maize buyers and processors to VAM grain suppliers while creating demand through public engagement on several media.
- HarvestPlus is now adapting approaches and learning from the Zambian pilot, for other countries.

Key actors and stakeholders involved (including through south-south/triangular exchanges, if any)

- Governmental institutions such as ministries of Health, Agriculture, and Education, and NISIR in Zambia
- NGOs such as World Vision, ProfitPlus, Peace Corps, GIZ, SUNFund, NFNC, ZARI
- CGIAR centers such as WorldFish, IITA, CIP, CIMMYT
- International organizations such as the World Food Program
- Private Seed Companies (ZamSeed, Seedco)

Key changes (intended and unintended) as a result of the investment/s

- Up to 175,000 farming households growing and consuming VAM by the end of 2016 having planted 43,000ha with 650mt of seed.
- 87,000mt of VAM worth $11.5 million produced for consumption and sale to improve nutrition and incomes.
- Advocacy: VAM has been included under the Zambian FISP and food reserve programs. Poor rural farmers in the program can access seed and fertilizer at 50% subsidized prices. 80mt of VAM seed was distributed by the program in 2016.
- HarvestPlus sponsors 'crop meetings' where local researchers compare experiences, and new developments across countries. Using local and regional staff and partners, HarvestPlus promotes south-south technical assistance, as VAM is now officially released in Nigeria, Tanzania and Zimbabwe, and demonstration plots have been established in Malawi. Other countries such as Ghana are independently testing, producing and officially releasing VAM.
- VAM is now being grown and consumed in vulnerable areas such as in the Boko Haram endemic and famine-affected region in the northeastern Nigeria. Women of child-bearing age and children are target groups for VAM.

Challenges faced

- HarvestPlus needed to provide financial incentives to de-risk initial seed production and miller engagement to support market entry for VAM.
- Market forces can be unpredictable, and create unanticipated value chain gaps.
- The regional crop release regulation can be challenging. For example, although SADIC has a regional seed harmonization law, this is not operationalized.
- Post-harvest losses and carotenoid degradation during storage but new packaging techniques to retain nutrients are being tested.

Lessons/Key messages

- Risk-sharing arrangements with any company that takes up VAM can be essential for success, but that an exit strategy should be established from the beginning to manage expectations.
- Regardless of the involvement of the seed companies, building and maintaining a unique brand for VAM that clearly distinguishes it from the many varieties that exist on the market is key to successful delivery and scaling up strategies.
- Sustained engagement over several years can overcome market challenges presenting in a single year, for example relating to pricing or risk aversion.
- Regional crop release mechanisms are important to stimulate scaling efforts

[i]. Gannon B, Kaliwile C, Arscott SA, Schmaelzle S, Chileshe J, Klungwana N, Mosonda M, Pixley K, Masi C, and SA Tanumihardjo Biofortified Orange Maize is as Efficacious as a Vitamin A Supplement in Zambian Children Even in the Presnece of High Liver Reserves of Vitamin A: A Community-based, Randomized Placebo-Controlled Trial. *Am J Clin Nutr.* 2014; 100(6): 1541-1550.

ii Palmer AC, Healy K, Barffour MA, Siamusantu W, Chileshe J, Schulze KJ, West KP Jr , Labrique AB. Provitamin A Carotenoid-Biofortified Maize Consumption Increases Pupillary Responsiveness among Zambian Children in a Randomized Controlled Trial. *J Nutr*, 2016; 146(12): 2551-2558.