Nutrition-focused home garden design

Internal Report: November 2013

Gardens for Health International 2 Atlantic Ave Boston MA 02110 **T** (781) 775 1182 jessie@gardensforhealth.org www.gardensforhealth.org

Table of Contents

About Gardens For Health 3

Our Home Garden Approach 3

Inputs 4

Education 5

Impact 6

Appendix 1: Home Garden Design 7

About Gardens for Health International

Gardens for Health International (GHI) works in Rwanda to provide lasting agricultural solutions to chronic malnutrition by:

- Partnering with health centers to integrate agriculture and comprehensive health education into the clinical treatment of malnutrition.
- Advocating for policies and programs that include nutrition-focused agriculture in the treatment of malnutrition.
- Providing technical assistance to partners interested in adapting our model and methodology for their communities(different languge on families in our program)

The integration into existing systems creates effective, sustained change. By partnering directly with health centers and staffing field educators as part of clinical personnel, our program is fully integrated into the health care system and existing clinical malnutrition treatment. In addition to direct service delivery, at each partner health center we work to train community health workers and health center leadership to improve the identification and treatment of malnutrition in the communities they serve. Finally, by receiving referrals from health centers, we are able to help bridge the gap between clinical treatment and community management and prevention of malnutrition.

We currently partner with 4 health centers in Gasabo District and 4 health centers in Musanze District. This year, we anwill provide direct services to 980 families; arming them with the knowledge, resources, and skills to overcome malnutrition in their homes and communities.

(insert a bit more about our program and what each family recieves)

Our Home Garden Approach

Our approach to home garden design is focused on giving families the tools that will best empower them to achieve greater nutrient security. I. To this end, we provide inputs and promote practices that are low-risk, self-replicable, and focused on building healthy systems. While the primary objective of our home garden package is to improve quantity and quality of household consumption, we recognize that over time and appropriately designed and maintained garden can be an important source of income for families in our program.

Our home garden package is the core deliverable that we provide to families enrolled in our program. It is comprised of four basic parts: three seasons of seeds and seedlings,13 weeks of agricultural education, regular home visits and 13 weeks of health education. Its objective is to:

- Increase food availability
- Provide nutritional and agronomic diversity
- Promote family food self-sufficiency

To achieve these goals, both the selection of crops we include, and the accompanying education we provide, are designed to leverage natural systems to increase production immediately and over the long-term. To this end we focus on the on-farm cycling of nutrients and the conservation of soil, alongside the provision of crops that promote household dietary diversity and crop biodiversity.

Inputs

We provide three seasons of seeds and seedlings, along with small livestock, to each family enrolled in our program. To the extent possible, our home garden inputs are designed to increase the availability of nutrient dense and locally appropriate foods for farm families. Prior to inclusion in our home garden package, each crop is evaluated on the following considerations:

- Nutrient content

- Cultural and agronomic relevance and appropriateness
- Self Replicable
- Environmental benefits
- Monetary value of crop relative to seed price

Every family in our program receives the following inputs:

Crop	Land area	Rationale
Orange flesh sweet potatoes	50 m2	Orange flesh sweet potatoes are high in vitamin A, the leaves can be used as nutrient dense fodder for livestock as well as food for people, and they grow well with low maintenance
Grafted avocado tree seedling	1	Provides an important source of fat, which is crucial given the low fat intake of vulnerable families; further symbolizes our long-er term investment
Amaranth (Dodo)	15 m2	Amaranth is a nutrient dense and resilient crop, which grows well with little to or maintenance

We also ensure individual preference in home garden design--to ensure better adoption and empowerment. W To this end, we provide families with 6 additional categories and ask them to select crops from options within each category. This approach encourages dietary diversity and crop biodiversity, while simultaneously allowing families to make decisions based on what they believe are most appropriate choices for their needs and abilities.

Crop Category	Land area	Rationale
Indigenous Leafy Green (select 1) • Nightshade • Spiderplant • Sukumawiki	15 m2	All three of these vegetables are nutrient dense and especially rich in phytonutrients, the seeds are easily saved, and they are well adapted to the local climate. Additionally, sukumawiki is culturally valued and able to be continually harvested.
Protein (select 1) • Soy • Kidney Bean	50 m2	They provide protein, are part of a healthy crop rotation, and fix nitrogen in the soil. Kidney beans are especially culturally valued. The beans we provide are biofortified with iron by Harvest Plus.
Market Vegetable (select 1) • Carrots • Eggplant • Onions • Green Pepper • Radish	30 m2	Market vegetables are culturally valued, provide a source of potential income as well as dietary diversity to families in our program. Carrots, for example, provide beta-carotene, while radishes have a dual use for families (both the root and leaf are edible).

Crop Category	Land area	Rationale
Agroforestry (select 2) • Cajanus • Caliandra • Tephrosia	Site dependent	Agroforestry trees and shrubs are nitrogen fixing, they prevent soil erosion and build soil health, and can serve as fodder for livestock.
Fruit Tree Seedling (select 2) • Papaya • Tree Tomato • Passion Fruit	2	Fruit trees increase the diversity of nutrients available to families, as perennials they are an important part of a healthy farm-scape, and they are easy to grow and propagate. These fruit trees also fruit within 6-8 months so they complement the longer-term avocado tree.
Small Livestock (select 1) • Laying hens • Rabbits	 4 6	Small livestock provide an important source of protein and/or income for families, they also improve the quality of compost, helping to build the health of the farm scape.

Education

Our approach to home garden design is rooted in the belief that an empowerment based model, which allows, families to make realistic, and lasting, changes to their household food production systems, is essential for both initial adoption and long term success of any intervention. To this end, our home garden inputs are accompanied by a 14 session education program that focuses on promoting practices that are low risk, capital inexpensive, and centered on building the long term health of the land families farm.

We describe our training approach as “knowledge intensive farming,” with the goal of helping farm families understand better the processes that effect family and land health so the can make more informed decisions about their land. Agriculture trainings are delivered at the household level in self-aggregated groups of 4-6 mothers. h. Our education is delivered by peer leaders, and our curriculum and training materials were designed in close collaboration with families we serve. This allows us to ensure that our education is culturally relevant and appropriately targeted. Our agriculture training is accompanied by a 14 session comprehensive health trainings designed to address the inter-related factors that make it harder for families to feed their children--HIV, family planning, hygiene, common illness. Health trainings are delivered at the health centers to coincide with and complement health services. Group trainings are supplemented by regular home visits, which allow our field staff to engage directly with each family in our program, problem solving together and ensuring that both gardens and families are thriving.

Training topics include:

	Agriculture	Health
1	Choosing a Seed Package	Nutrition
2	Bed Preparation	Malnutrition
3	Small Livestock	Listening and Communication
4	Planning and Intercropping	Hygiene
5	Planting and Transplanting	Family Planning
6	Compost	TB and Malaria
7	Banana Production/Management	Mental Health

8	Healthy Plants & Healthy Soils	Pregnancy
9	Pest and Disease	Breast and Complementary Feeding
10	Fruit Tree Production	Common Illness
11	In Season Care	Traditional Healing
12	Fertilizer Trees (Agroforestry)	HIV
13	Post Harvest & Seed Saving	Gender Based Violence
14	Planning for Next Season	Savings

Measuring Impact

We measure long-term child health status, knowledge of mothers, and proxy indicators for household nutritional status, such as household dietary diversity.

Initial analysis of program data shows that 71% of children who enrolled in our program in 2012 B and were previously underweight are in a healthy weight-for-age range one year later.
. We are primarily concerned with sparking lasting changes in child health, which we won't see until we are able to track cohorts for a total of 36 months.
Not only do our results suggest that health outcomes are improving, but analysis of Household Dietary Diversity Score (HDDS) suggests lasting changes in consumption patterns as a result of our program. One year after enrolling in our program, 88% of families report that they consume four or more different types of food each day, and 18% report that they consume nine or more different types of food daily. Moreover, these findings suggest that families begin to consume a wider variety of foods in the first season, likely as a result of the education we provide, and that over time - presumably as they begin to harvest foods from their gardens - the upward trajectory in their diverse consumption continues.

The story of Anonciatha, below, provides some illustrative context :

When Anonciatha enrolled in our program in September 2013, as a member of the Season 2013 A cohort, her four year-old son, Bertin, weighed only 10 kgs. Over the course of the past year, thanks in large part to the support she received from GHI staff and the community of mothers in her cohort, Anonciatha proudly reports that Bertin is healthy! He has gained 3 kgs, and is no longer malnourished.

For Anonciatha, the GHI training was "the first time I learned what a balanced meal was." Not only did Anonciatha learn what to feed her children - GHI's agriculture programming gave her the seeds and skills to put that knowledge into action. "I was trained about (eating) four colors, and then was given seeds with all four colors," she explains. "It was easier for me to make a balanced meal once my garden grew because I had all four colors in my garden." Today, Anonciatha is growing dodo (amaranth), carrots, beets, beans, potatoes and peanuts.

Lessons Learned

- Develop local sites of seed multiplication

Some indigenous seed or new seedstock which is difficult for most farmers to access, we multiply ourselves: isogo, isogi, dodo and orange flesh sweet potato cuttings. Local production can ensure that the right varieties which families prefer (for example, particular varieties of amaranth) can be accessed by partners consistently and in a timely fashion.

- Develop quality control and local supply chains for small livestock

Providing healthy livestock is a core deliverable in our program. Because small livestock can be affected by transport and environment changes, we have established protocols to guide the selection and distribution of chickens and rabbits for families. Connections with suppliers is incredibly important to ensure quality age of health of livestock--and if livestock die within the first week of a families receipt of livestock, the suppliers replace them. Further, we have found that chickens are typically selected more than 80% of the time when families are provided with a choice, which is an indication of the lack of housing for small livestock that families posses and the anticipated risks involved with rabbit rearing.

- Move beyond the “kitchen garden” concept

The current popularity of “kitchen gardens” as a concept has served as a challenge. The mounded gardens or keyhole gardens, which are the common conceptualization of “akarima k’igikoni” in Rwanda, do produce more surface area per square foot of garden space. However, in previous promotion of these models we have found low adoption: the labor investment is very intensive relative to productive value, the volume of compost and top soil to construct these mounds is in short supply. We have found that in this particular setting training on agro-ecological techniques more than compensate for lost surface area gains from using mounds, particularly when labor and materials are factored into the cost.

- Tie education to input distribution

Prior to receiving livestock or fruit trees or selecting seeds, families must attend a training session related to the topic. For example, before selecting their seed package, participants must attend the nutrition training and selection a home garden package education sessions. Such education is particularly important for ensuring adequate hygiene and care of small livestock.

List of Sources

Vasey, D.E. (1985). Household Gardens and their Niche in Port Moresby, Papua New Guinea. 7(3) Food and Nutrition Bulletin.

Hanstad, T. and Lokesh, S.B. (2002). Allocating Homestead Plots as Land Reform:Analysis from West Bengal. RDI Reports on Foreign Aid and Development #115.

Marsh R. (1998) Building on Traditional Gardening to Improve Household Food Security, FAO article.

Thompson, Brian, and Leslie Amoroso.Combating micronutrient deficiencies food-based approaches. Rome: Food and Agriculture Organization of the United Nations ;, 2011. Print.

Mujiburrahman, M, M Aminulislam, D Mahalanabis, S Chowdhury, and E Biswas. "Impact Of Health Education On The Feeding Of Green Leafy Vegetables At Home To Children Of The Urban Poor Mothers Of Bangladesh." Public Health 108.3 (1994): 211-218. Print.

Appendix 1: Home Garden Design

The total land space of our home garden package is currently 195 m2. It is estimated primariyl based upon average land availability of our partner households and the land space we believe is necessary for families to achieve greater dietary diversity. It is important to recognize that his exact garden iteration represents a model we believe is ideal for improving long-term food and nutrient security.