



Photo by CRS Ethiopia staff

Advocating for nutrition change

SYNOPSIS

Resilience through Enhanced Adaptation, Action-learning, and Partnership (REAAP) promotes vegetable homestead gardens (e.g., the signature keyhole gardens of Catholic Relief Services [CRS]), behavior change, and food preparation trainings to improve the nutritional intake of mothers and children. By producing year-round, nutrient-dense

foods through home gardening and preservation techniques, households can become more resilient by managing climate risks and shocks such as drought. The innovative aspect of the REAAP keyhole garden approach is the integrated agricultural-nutrition intervention, which is packaged to deliver much more than just a homestead garden.¹

¹ Working within the Public Safety Net Program (PSNP) funding priorities and guidance, Catholic Relief Services (CRS) was also constructing keyhole gardens in Ethiopia prior to REAAP through its USAID Title II Development Food Assistance Program (DFAP).



faith. action. results.



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Enhancing sustainable production. The REAAP keyhole garden technique focuses on intensively growing nutrient-dense vegetables in a small space, paying close attention to soil improvement, watering, and weeding. By applying green manure and cover crops in the keyhole garden beds, households increase organic matter and nitrogen availability in the soil. Other soil improvements include mulch treatments and water channeled from the household, both of which are added through a basket in the center of the garden. The use of household water guarantees a year-round growing season and provides year-round access to vegetables at the household level, even during the dry season or periods of erratic rainfall. Fencing protects the keyhole garden from being distributed by goats and chickens.

Keyhole gardens contribute to resilience in a number of ways within adopter households, including recovery from shocks (e.g., El Niño) or household stresses. The gardens decrease risk from dependence on any one staple crop as well as from crop loss at the farm-level. Vegetables mature more quickly than staple crops do (a factor that becomes important during periods of erratic rainfall) and can be grown throughout the year. Thus, REAAP keyhole garden adopters reduce risk simply because

KEYHOLE GARDEN

A keyhole garden is a two-meter-wide, circular, raised garden bed with a keyhole-shaped indentation on one side. The indentation allows gardeners to access the bed for weeding and adding gray water and mulch to a composting basket situated in the center of the garden. Keyhole gardens are relatively easy to construct, and they utilize locally available materials such as stones, soil, mulch, grass, and tree branches.

the garden crop faces less exposure to possible disruptions. Vegetables from keyhole gardens can be processed into value-added products and preserved using simple drying techniques, making year-round, nutrient-dense foods available at the household level.

Building functional organizations. In order for REAAP to institutionalize and sustain agriculture-nutrition outcomes, the program had to work with the disaster risk reduction (DRR) committee, savings and internal lending communities (SILC)² agents, and DRR facilitators within the REAAP communities. At the DRR committee level, improved governance created the organizational environment necessary to catalyze

² Community-based groups such as SILC have contributed to building the social and financial capital of vulnerable households in Ethiopia. CRS' SILC model strengthens social capital and household absorptive capacity by allowing participants to draw on savings in times of shock. During the current drought, SILC group members continue to have access to regular savings, loan, and social or emergency funds to help them cope.



Photo by CRS Ethiopia staff

more effective performance, which motivated committee members to more actively pursue the committees' goals and objectives, including scaling up the keyhole-garden integrated agriculture-nutrition intervention.

REAAP achieved a high adoption rate for the keyhole garden package of interventions (2,045 functional homestead gardens³) despite the 2015–2016 El Niño, which contributed to widespread drought across many areas of East and West Hararghe zones, and caused many households to struggle. Significantly, after the drought, many households restarted growing vegetables as soon as the rains began, utilizing their own money to purchase seeds, planting materials, and other inputs. These actions demonstrate promising signs of sustainability for the keyhole-garden integrated agriculture-nutrition intervention. REAAP also engaged with, and provided active capacity-building support to, *woreda*⁴-level development officers (extension agents), so they could encourage vegetable consumption and increased nutritional intake for mothers and children.

REAAP's support for keyhole gardens, specifically as a strategy to improve maternal and child health and nutrition, involved partnering with the Government of Ethiopia (GoE). REAAP facilitated and supported

OVERVIEW OF AGRICULTURE-NUTRITION RESULTS IN REAAP

- **2,009 keyhole gardens** were built in Oda Bultum, Mieso, Tullo, Meta, Midhega Tola, and Fedis districts.
- **2,045 homestead gardens** functioned during the 2015–2016 El Niño drought and or rainy season in Oda Bultum, Mieso, Tullo, Meta, Midhega Tola, and Fedis districts.
- **Households introduced runoff** harvest technologies to reserve water for keyhole gardens in drought-prone areas as a means to reduce risk and ensure the garden's survival.

agronomy and nutrition training for government personnel and community health workers, making them a sustainable, community-based source of technical support for further scaling up of the keyhole garden package of interventions.

Fostering change and adoption through demonstrations and modeling. In Ethiopia, the populace does not commonly eat fresh vegetables;

³ REAAP communities constructed 50–100 demonstration gardens for agro-economic-nutrition education training, while, within REAAP communities, 2,045 additional homestead gardens were constructed for sustainable production.

⁴ A *woreda* is an administrative division, comparable to a district, managed by a local government in Ethiopia.

they use vegetables mainly as relishes and not as a significant part of their diets. Thus, in order to foster change, REAAP needed to undertake culinary demonstrations.

In Ethiopia, shiro is a local stew made with field peas and chickpeas, commonly eaten on a daily basis. Although shiro is high in protein, no vegetables are included in the dish. Through culinary demonstrations, REAAP showed how vegetables could be introduced to local dishes such as shiro.

Initially, people did not understand how eating vegetables helped them or their children. Thus, the REAAP keyhole-garden package of interventions focused on nutrition training, including training on cooking practices, preservation methods, food preparation, recipes, and the health benefits of consuming vegetables. REAAP used community-led cooking demonstrations as entry points to discuss with parents how to diversify their diet and increase micronutrient consumption—especially for children—using locally available foods including vegetables produced in keyhole gardens.

Since learning about healthy vegetables and how to cook them to retain nutritional value, both mothers and fathers have observed changes in the behaviour and health of their children. Women have started preparing vegetables daily for children under five, and men proudly mention that their children eat vegetables several times per day and, as a result, are sick less often. This shift in behaviour took place not only because of improved knowledge about nutrition, but also because of the increased available income that came from linking keyhole-garden households to both SILC groups and seed and input systems (allowing households to purchase vegetable seeds and maintain future keyhole gardens. REAAP community members near Dire Dawa have reported that “within a year of garden promotion, some communities have bought their own seeds in the local market with their own money.”

Linking SILC to keyhole-garden adopters was an innovative approach that helped promote a more diversified diet. Because of increased access to savings and income, people had more money

to purchase necessary seeds and inputs for growing the nutritious foods promoted by REAAP communities. Over the long term, SILCs offer communities one of the best prospects for gaining access to income-generating and technical-support activities that help them obtain nutrient-dense foods. According to one REAAP DRR field agent, “[A]lthough REAAP did not distribute vegetable seeds in 2016, several communities and groups requested assistance with purchasing vegetable seeds in larger marketing towns, many of them with funds generated by their Savings and Internal Lending Communities groups.”

Strengthening seed and input systems. The timely availability of different type of vegetable seeds locally is one of the ongoing challenges for sustainable homestead gardening in East and West Hararghe zones. REAAP has not offered incentives, such as vegetable seeds, to create keyhole gardens. Offering vegetable seeds repeatedly, for free, could limit the incentive for households to maintain their keyhole gardens when the subsidy ends, and to make long-term linkages between households, communities, and seed multiplication or input suppliers. Therefore, REAAP is invested in linking SILC groups with communities so that households can assume the responsibility to link or supply seeds to the community.

REAAP’s Community-Managed Disaster Risk Reduction (CM-DRR) strategy activated locally driven seed supply and linkages. Through collective action, it maximized geographic access to agricultural inputs as well as financial access to small agricultural equipment and seeds. This access ensured linkages and the sustainability of the keyhole-garden intervention. DRR committees addressed access to vegetable seeds by reaching out to GoE agencies and making bulk purchases from major market centers, which offer a selection of agri-dealers and a diverse range of seeds. Community members took collective action to determine seed availability and accessibility through local government offices, markets, or established seed multiplication plots at the community level. They established local supply

chains for vegetable seeds in many communities, and are in the process of developing more through peer-to-peer visits in many other communities. While keyhole gardens do not require bulk seed packages, community members are learning how to bulk their needs so they can purchase for the entire community, and enable multiple households to use smaller units for plantings.

Advocating for behavior change. Despite the drought conditions precipitated by El Niño, the REAAP keyhole gardens have become functional eighteen months after their establishment. Women have found the technology acceptable—vegetable care is hand-labor intensive, but, with the raised beds, a woman can easily manage it, even when carrying a baby on her back. REAAP provided families with skills training on how to prepare food for their children.

During times of drought, women and girls have to walk further to access water for home use. However, the keyhole garden is close to home, so its labor can be integrated with other daily household tasks and does not require further transportation time to access fields. A CRS-Ethiopia commissioned study

SCALING UP EFFORTS IN ETHIOPIA

The keyhole-garden approach involves positive engagement with governments, communities, and households to bring about sustainable change at scale. Recognizing its contributions to obtaining nutritional goals, the Government of Ethiopia included keyhole gardens as an intervention in their Productive Safety Net Programmer Phase IV: Programme Implementation Manual (Ministry of Agriculture, Addis Ababa, December 2014). CRS Ethiopia was instrumental in influencing policy change in this area by demonstrating the efficiency of the keyhole-garden intervention in its project areas.

on keyhole-garden adoption⁵ found that REAAP households were:

- Confident about maintaining keyhole garden year-round
- Believed that maintaining keyhole gardens builds healthy families and also saves money⁶
- Noticed that children fed nutrient-dense food were less likely to become malnourished

During a field visit conducted in June 2016, participants in focus group discussions and key interviews frequently mentioned that households with keyhole gardens were now making daily meals that contained vegetables for their children under five years of age, even in the dry season.

REAAP organized trainings for *woreda* development agents and model households to further scale up agronomic practices in communities of East and West Hararghe zones to:

- Increase the sustainability of the keyhole gardens.
- Facilitate linkages with public and private seed systems.
- Promote the preparation and consumption of vegetables in the home.

After initial household participation in the keyhole-garden training package, community groups fostered relationships with communities, organizations, and service providers to scale up further keyhole gardens. They achieved this through joint visits, DRR committee campaigns, and broadening social as well as business ties with technical agronomic support and seed input suppliers.

By linking nutritionally vulnerable households with a variety of vegetable seeds and technical support, REAAP has worked to increase mothers and children's consumption of diversified, nutrient-dense foods. Households with keyhole gardens showed higher levels of dietary diversity, despite the 2015–2016 El Niño, which contributed to widespread drought across many areas of East and West Hararghe zones.

In the keyhole garden, vegetables are grown in a mix—such as carrot, lettuce, cabbage, onion, Swiss

5 Yohannes Haile and John Steelman, Barrier analysis to promote the sustainable use of keyhole gardens in Ethiopia designing for behavioral change (DBC), CRS Ethiopia, October 2015.

6 Ibid. The CRS Ethiopia study also found that keyhole garden non-participants perceived that selling keyhole garden vegetables was more beneficial than using them for home consumption.

chard, and tomatoes—and include a diverse set of species. Taken collectively, dietary diversification at the household level can help communities buffer against food shortages caused by erratic rainfall or drought. Having a homestead garden also significantly reduces recovery time from a shock – an important fact given that children born during periods of drought are more likely to become chronically malnourished later in childhood than those who were not.⁷

Learning to-date: An important step in improving the nutrition status of women and children under five is the use of targeted interventions to achieve positive behavior changes at household and community levels.

A series of linked home and agro-economic activities can creatively raise community members' and GoE's knowledge levels about more diversified and nutritious diets, as well as use of local foods. The keyhole-garden interventions show promising signs of sustainability, despite the 2015–2016 El Niño, which contributed to widespread drought across many areas of East and West Hararghe zones. Keyhole gardens strengthen existing resilience strategies by preserving informal, social, safety-network-based strategies that reduce risk and provide household-level buffers against shocks and stresses. Although REAAP cannot assume that nutrition will automatically increase with the use of keyhole garden, ongoing training helps connect the keyhole gardens with the desired outcomes.

REAAP KEYHOLE-GARDEN PACKAGE OF AGRICULTURE-NUTRITION INTERVENTIONS AND RESILIENCE

Contributions to absorptive capacity: Absorptive capacity refers to the ability to minimize sensitivity to shocks and stresses. REAAP keyhole-garden households had access to savings and loan groups (SILC); self-insurance if cereal crops failed; and social cohesion/social protection support through shared keyhole-garden labor and crops.

Contributions to adaptive capacity: Adaptive capacity refers to the ability to proactively modify conditions and practices in anticipation of or as a reaction to shocks and stresses. Keyhole-garden model families assisted with trainings on the use of seeds, planting materials, water harvesting techniques (such as the re-use of household water), livelihood diversification, and access to technical training and skill development from Area Development Program Office (ADPO) and *woreda*-level extension staff.

Contributions to transformative capacity: Transformative capacity refers to the ability to facilitate systemic change and a positive environment in which people are willing and able to invest and innovate while managing risks. Transformative capacity addresses the underlying cultural, institutional, and learning dynamics within a system, enabling communities to absorb and adapt over the long term. Keyhole gardens contribute to organized communities by encouraging knowledge adoption, community action, nutritional behavior practices, the creation of vegetable seed groups, and strengthened links between local government structures and communities.

⁷ Jennifer Bryce, Nancy Terreri, Cesar G. Victora, Elizabeth Mason, Bernadette Daelmans, et al. Countdown to 2015: tracking intervention coverage for child survival, *The Lancet Series*, September 18, 2006, Volume 268, No. 9541.

