



ISSUE BRIEF

Reducing Post Harvest Waste and Loss



@Lucy Beck, CARE 2015

OVERVIEW CARE works with rural households to improve agricultural activities, from pre-production planning to post-harvest technologies and marketing of crops. Effective post-harvest management is crucial to increasing household incomes from agricultural productivity.

For over 70 years, CARE has worked in the world's poorest communities to ensure that rural farmers have the resources they need to feed their families and communities. CARE works in 94 countries with more than 80 million people worldwide through more than 1,000 projects, from emergency relief to early childhood education, to maternal and reproductive health. Programs focus on the poor and extreme poor, those who live on less than \$1.25 a day, and have little access to markets, education, or decision-making. Through village savings groups that empower members to gain financial independence, or by providing drought-resistant seeds that better withstand extreme weather, or by working with private sector partners to help farmers reach markets, CARE's projects empower women and men to be agents of change in their communities.

Post-Harvest Management

BOOSTING RURAL INCOMES

The lack of post-harvest collection, processing and storage facilities often obligates small-scale farmers to sell their products immediately upon harvest to middlemen who add to transaction costs at the disadvantage of producers. High

rates of post-harvest losses due to pests and poor handling and storage also mean that farmers are not able to meet their contracted obligations, further entrenching them in the cycle of poverty. Market challenges – few and distant marketing opportunities, unpredictable market prices, costly and unreliable storage, handling and transport facilities, and product quality that does not meet market standards – further exacerbate the plight of small-scale rural food producers.

An efficient post-harvest system maximizes efficiency by improving quality and minimizing loss from farm to plate. CARE works with small-scale farmers both pre- and post-harvest to also maximize return for all involved. CARE's programs help rural farmers improve practice in storage, handling, transport, value addition and ultimately by connecting small-scale farmers to markets and credit. By retaining more of their harvests, selling them at favorable terms based on demand, and accessing critical resources, small-scale farmers can participate and compete in equitable and sustainable farming systems.

Participatory Experimentation

FARMER FIELD AND BUSINESS SCHOOLS

CARE uses [Farmer Field and Business School \(FFBS\)](#) as a platform to experiment with and learn about participatory approaches to agricultural production techniques, risk analysis, business management and market literacy, and gender equity. FFBS serve as a laboratory to test how post-harvest technologies can be adapted to local contexts and agro-ecological conditions. Through a facilitated discussion, farmers are asked to come up with their own ideas on how to tackle food safety, quality assurance, storage and protection from pests. Indigenous technical knowledge also plays a key role in post-harvest management. In addition to learning about new low-cost technologies, farmers also share practices that they have traditionally used that are effective for post-harvest insect and disease management. This model for learning enables farmers to better understand the importance of:

- harvesting crops at optimal maturity; and ensuring the right moisture content at harvest, and during drying and storage.;
- simple technologies for packing, ranging from a simple shed in the field or a separate structure with cooling and storage facilities;
- Enhancing their technical knowledge of processing,

transporting and applying post-harvest technologies such as modified atmosphere storage for each crop;

- simple methods for processing fresh produce such as adding value by drying (e.g. cassava); and
- transport practices that can reduce losses and methods for handling at destination (wholesale or retail markets).

Low-Cost and Innovative Technology

SUSTAINABLE SOLUTIONS FOR RURAL FARMERS

The [Graduation with Resilience to Achieve Sustainable Development \(GRAD\)](#) is a five-year USAID-funded project designed to help the Government of Ethiopia find sustainable solutions to chronic food insecurity. More than 4,000 GRAD households living in the Ethiopian Highlands were engaged in the potato value chain, an increasingly important crop in the Ethiopia Farming system.

GRAD is seeking to help them overcome numerous constraints in the sector, including access to quality seed. In Ethiopia, seed potato is produced by very few research facilities and is typically distributed through farmers' cooperatives. Supply falls far short of demand and distribution networks do not reach poor households such as those supported by GRAD. To counter this, the project has taken a well-known technology – Diffused Light

My name is Alemush Fiseha. I live with my husband and children in Lay Gayint Woreda, Amhara. My family participates in the potato value chain with the support of GRAD. The project gave us training, helped up obtain improved seed potato on loan, and covered some of the costs of



constructing our own DLS, which was a new idea for us. We had been storing seed in traditional way like keeping the seed on the floor or leaving the seed inside the soil for a long time. As a result, a lot of seed was wasted and our income remained low.

Following the construction of the DLS, we are able to store the seed with minimal loss. Two of my neighbors also constructed a DLS after they saw our success.

The new income has been very good. In 2013, we only harvested 23 quintals of potato and earned 13,000 birr (650 USD). In the next two years, we earned more than 109,000 birr (5,454 USD) birr from the business, and expect to secure over 100,000 birr (5,000 USD) gross income this year. This income helps us to send our children to school, buy assets like livestock, and have enough food for the family. I'm very confident that my family will not go back to food insecurity.

Storage (DLS) – and introduced it in project communities in an innovative and highly successful way. DLS is a low-cost technology used to extend the storage life of seed potato and ensure a quality seed supply for the subsequent production season. DLS is a structure that uses natural indirect light to reduce storage loss. The basic characteristics of a DLS structure are: water-proof roof, translucent walls, and adequate ventilation. DLS can be made from eucalyptus poles with shelves made of thin eucalyptus strips/sticks. Corrugated iron sheets are the only significant cost and farmers can build a DLS with tools at hand.

From Storage to Credit

CONNECTING RURAL FARMERS TO CREDIT AND MARKETS

In 2014, good rainfall enabled excellent harvests of millet and cowpea, which are some of the climate resilient livelihood strategies identified by the communities themselves. The Adaptation Learning Program (ALP) is a UK (DFID), Denmark, and Austria-funded program that increases the capacity of vulnerable households in sub-Saharan Africa to adapt to increasing and uncertain climate change and climate variability. ALP-supported communities implemented *warrantage* – a strategy that helps farmers store their surplus crop production and receive credit to satisfy their immediate needs. Approximately 12,702,500 CFA franc (US\$25,405) has enabled 464 women and 429 men to store more than 70 tons of millet and cowpea in warrantage cereal banks. Many communities in non-ALP sites are now requesting to be part of warrantage groups in ALP communities. Cereal banks in the warrantage system in Niger are breaking the cycle of debt incurred by vulnerable people who were forced into selling their agricultural produce at low market rates. Access to credit through warrantage is providing capital for investment in diversified and lucrative livelihood activities such as fattening of sheep and goats,



Nana Kadiza 12, Kagadama village, Niger

@Josh Estey, CARE 2016

which is mostly done by women; sale of sugar, tea, chocolate, and sugar cane; and transporting goods and agricultural by-products within the communities and to weekly markets. ALP supported the capacity of 52 warrantage and VSLA groups to develop their organizational frameworks and succeed in fulfilling requirements for legal recognition. Legal registration enables warrantage groups to open bank accounts and access formal financial savings and credit services.

“1.3 billion tons of food are globally wasted or lost per year. Reduction in these losses would increase the amount of food available for human consumption and enhance global food security – FAO ”

Impact at Scale: Policy & Research

POLICY INFLUENCING

For CARE to meet its food and nutrition security and climate resilience goal, we must multiply our impact, prioritizing interventions like policy change that can generate positive impact at large scale. CARE's global advocacy is the collection of CARE's national level advocacy, from which we learn and which informs our multilateral advocacy. Our multilateral advocacy, in turn, can shape national advocacy, generating policies to which we hold our national governments accountable.

We seek a world in which national to global policies empower small-scale food producers and women to realize their right to nutritious food and support their resilience to climate change. In CARE's advocacy, we target national, regional (CAADP, Malabo & Maputo Declaration commitments), and global (UNFCCC & Scaling Up Nutrition) policy processes. Our overall policy goal by 2020 is to see global, regional, and national agriculture policy and investment support CARE's SuPER principles and:

- protect and promote the right to food, inclusive governance, and access to and ownership of productive resources;
- integrate climate change and build resilience;
- integrate and promote gender equality and women's empowerment; and
- integrate nutrition and prioritize positive nutrition outcomes.

Policies must be responsive to small-scale food producers' needs through scale up of effective approaches, like Farmer Field and Business Schools, and facilitating their access to resources like climate and weather forecasts, credit, and markets to support sustainable, productive, profitable, equitable, and resilient (SuPER) livelihoods. These approaches and resources – and SuPER livelihoods generally – include means of addressing and reducing post-harvest food loss.

RESEARCH PARTNERSHIPS

CARE seeks to shape and promote sustainable and just food systems in the context of climate change for the millions of people who live in rural poverty and face food and nutrition insecurity. CARE partners with a multitude of research institutions to test, validate and scale innovations that best meet the needs of small-scale food producers. CARE's engagement with research partners ensures that research is directed toward understanding the challenges of target populations and identifying solutions that respond to the social, political, economic and environmental context in which they seek to lead dignified fulfilling lives, free from poverty. Merging CARE's reach and depth in agriculture development programming with cutting edge research enables us to identify critical points where interventions will do the most good and develop evidence-based solutions that can be applied at scale to achieve transformational impact.

CARE has extensive and influential partnerships and alliances with several research and policy institutions at both global and national levels. Partnerships include, among others, the International Food Policy Research Institute (IFPRI) and the Climate Change, Agriculture, and Food Security (CCAFS) Research Program Centre of the Collaborative Group of International Agricultural Research Centres (CGIAR); Wageningen University and Research (WUR), Cornell University, and the 3D4AgDev Program of the Plant & AgriBiosciences Research Centre at the National University of Ireland Galway. We also partner with numerous southern-based national research institutes, universities, and regional policy research networks such as Sokoine University of Agriculture, Chinhoyi University, the Food and Nutrition Research Policy and Advocacy Network in Southern Africa (FARNPAN).

CARE Food and Nutrition Security

Juan Echanove, Senior Director

Juan.echanove@care.org

US: 404.784.3710

FR: 33.625.894.601

