



Food and Agriculture
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REDUCING FOOD LOSSES THROUGH POSTHARVEST MANAGEMENT



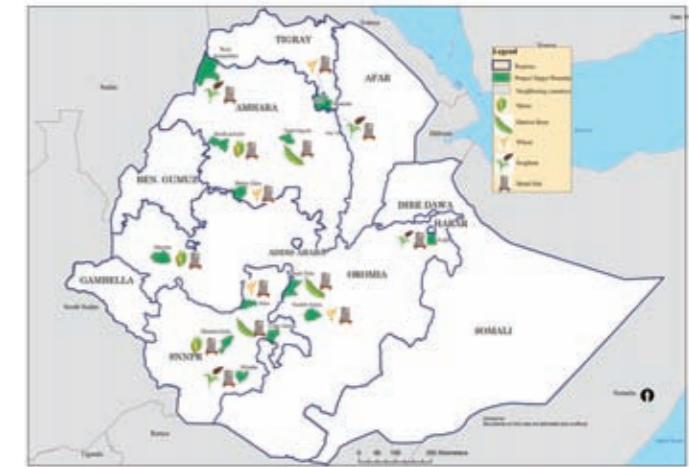


REDUCING FOOD LOSSES THROUGH POSTHARVEST MANAGEMENT

Promoting post production management technologies for farmers

PROJECT OVERVIEW

Project title	Reducing Food Losses through Improved Post-harvest Management in Ethiopia – Phase 1
Project Code	GCP/ETH/084/SWI
Donor	Swiss Confederation
Targeted Regions	Amhara, Oromia, SNNPR, Tigray
Budget	USD 3 251 605
Government Partners	Ministry of Agriculture and Livestock Resources of the Federal Democratic Republic of Ethiopia, Regional Bureaus of Agriculture, Ethiopian Institute of Agricultural Research (EIAR), Jimma University
Beneficiaries	7 746 grain producing smallholder farmers, primary farmers cooperatives, youth artisans, agricultural experts and extension workers.
Project Period	December 2013 – May 2018



Project Operation Areas by Woredas and Intervention

INTRODUCTION

Ethiopia loses a significant proportion of food due to poor postharvest management practices and technology. It is estimated that insect pests alone cause 21 percent of annual crop losses. Previously, key aspects of support including strategy and policy frameworks, resource allocation, research and extension services were given less attention. Promotion of the few available improved postharvest technologies has been fairly minimal which has led to the overwhelming majority of Ethiopian smallholder farmers to continue using ineffective traditional technologies and practices. In light of soaring food prices and food shortages, this significant proportion of postharvest loss is not tenable.

Improving post production management, reducing food losses

With funding from the Swiss Agency for Development and Cooperation, a 4.5 year FAO project on Reducing Food Losses through Postharvest Management was launched in December 2013 to contribute to food and nutrition security through reducing grain postharvest losses. The project analyzed the patterns of postharvest losses and enhanced farmers' and the Government's capacity to better address post production losses.

FAO, working closely with the Ministry of Agriculture and Livestock Resources, and regional Bureaus of Agriculture, targeted 7,746 smallholder farmers in 70 kebeles (smallest rural administration units) of Amhara, Oromia, SNNP and Tigray Regional States with training and provision of improved technology. Youth groups and manufacturers of equipment related to postharvest management technologies also indirectly benefited

from the intervention. Government institutions and experts benefited from capacity building, training and provision of inputs.

The overall support includes:

- (1) building the capacity of key, relevant stakeholders on postharvest management,
- (2) addressing the awareness, information and knowledge gap,
- (3) promoting good practices and technologies on postharvest handling, and
- (4) improving coordination, strategy and policy directives to synergize efforts carried out by different stakeholders.

Highlights of project achievements

The intervention successfully addressed the challenges that smallholder farmers and government institutions face with regards to post-harvest losses. These challenges are: lack of awareness, poor post production management, poor access to technologies, absence of clear postharvest strategy and inadequate institutional capacity.

Notable achievements are as follow:

- Postharvest management as a government agenda –** The project advocacy towards establishing a postharvest agenda within national and regional polices was highly successful. It resulted in the formulation and endorsement of the postharvest management strategy for grains in Ethiopia, which did not exist prior to the project. Furthermore, it also led to the formulation of policy briefs that informed the necessary changes at the policy levels. The postharvest issue is a core agenda item for policy making within the national and regional governments.
- Scaling up –** Regional governments have recognized the benefits of the project and its introduced technology and decided to replicate the project in other parts of the regions.
- Institutional capacity building –** Training and input supplied for farmers and government and community level institutions further developed their capacity. For instance, the provision of a moisture tester to Farmer Training Centers and agricultural extension agents has enabled them to better support farmers. In addition, Melkassa Research Center and Jimma University upgraded their capacity in postharvest management services.
- Technical capacity building –** Behavioral change realized through trainings, awareness creation and capacity building reached more than 95 percent of the targeted beneficiaries. The training and capacity building enabled farmers to understand the magnitude of postharvest losses and the manner in which they can mitigate them. Training and inputs provided to the beneficiary communities have reduced postharvest grain losses. Assessment against the baseline survey indicated that the postharvest losses have been reduced by 10 to 20 percent.
- Technology adoption and use –** Farmers who received the training and postharvest management technology have valued the benefits of metal silos and PICS bags. The demand for both products is high

among the farmers. Farmers are linked with metal silo manufacturers to purchase the products. Furthermore, farmers who are not a part of the project have also shown the interest to use the postharvest technology.

- Reduced workload on women –** Traditional grain stores are mainly constructed by women which requires considerable work in assembling the sticks and mud. Moreover, they require maintenance and do not last long. It is also not convenient to store the grain or to remove it. Metal silos and PICS bags have made this job easier.
- Reduced application of pesticides –** With the improved grain storage facilities, there is no need to apply pesticides to the grain. The risks and monetary expenses associated with the chemical have been reduced.
- Market value improved –** Grain stored in improved storage facilities excels in quality and, as a result, people have shown interest in buying pesticide-free grain. Farmers' incomes therefore increased. Fearing pest attacks, farmers used to sell much of their grain right after harvest for relatively low prices. Nowadays they can store their grain in metal silos and sell it whenever they think the price is favorable. A case in point is farmers who used to sell maize for 300 birr a quintal immediately after harvest but now they are able to sell for up to 550 birr a few months later once prices have increased.
- Job opportunities –** Young people organized into groups were supported with training and startup capital (including money and tools) to produce metal silos. Many young people have started their own business by manufacturing and selling metal silos to farmers.



CASE STUDY

"Improved grain storage facilities provide many advantages over the traditional ones."

With technical support from FAO and financial assistance from the Swiss Government, since 2013 the Federal Ministry of Agriculture and Livestock Resources and their regional offices have been implementing a project aimed at reducing postharvest food losses in four regional states of Ethiopia. In Amhara Region, the project directly supports 800 households in four districts with postharvest related interventions. Yetikamo Community in Debre Elias is known for growing wheat and maize. Farmers grow these crops for their own consumption and also for selling at local markets. However, postharvest crop loss is a major problem for these farmers. Even though crops are lost at different stages, losses at the storage stage are the most serious, and a concern which warrants intervention.

One beneficiary story is as follow:

Bertukan Musse is 48 years of age and a single mother of five. She lives with her son in Yetikamo Community in Ethiopia's Amhara Region. She farms for a living, mainly growing wheat and maize.

"As a single mother who lost my husband 15 years ago when my children were too little, I had to go through difficult times to raise five children single handedly. In addition to farming, I was making a local drink to complement my means of livelihood. I managed to buy oxen which my first son used for plowing when he was just 13 years old. My son was supporting me until he got married and started his own independent life on farmland which I gave to him".

"Four of my children are already in their own nests and my last son is in grade nine. I have two hectares of farmland. I hire a male farm worker to help me with farming. I pay him on a contractual basis. I often make enough produce for my own consumption and I sell some for income. This year I harvested 40 quintals of wheat".

"An extension worker in our village assists us with upgrading our farming activities. She trains us on how to make compost and plant crops properly. She advised me to join the project that promotes reducing crop losses that occur during the period after harvest. I participated and received training on how to reduce crop losses using improved grain storage facilities".

Traditionally I was using *gota* and *gotera* for grain storage. I made them with mud and sticks, and it took me months to make one. They host grain-eating pests, rodents and attract moisture easily. I had to check the grain in these storage containers every other week by moving the whole crop from one storage container to another, which was tedious and time consuming. Sometimes I used pesticides every three weeks, and used traditional pest prevention methods like applying chili pepper and Eucalyptus tree leaves which were not always effective.

"I had to wash the crops which I applied the chemical pesticide on. However it was not easy to remove it by washing. When I made injera, the food itself smelled of the pesticide. When we took it to market, buyers easily identified the crops which were mixed with pesticide. Buyers offered less for crops which were applied with pesticides and affected by pests".

"Thanks to the project, our new grain storage containers provide greater advantages over the traditional ones. I don't have to spend a lot of time, energy or material resources to make the traditional containers any longer".

"Using metal silo and PICS bags, I am able to store grain crops as long as I want, eat clean food and sell my crops for a good price at the local market".

"Now we eat and sell pesticide-free grain, are relieved of the risks of pesticides and also earn better income from our produce. With the new storage facilities, I don't have to worry about pests attacking my crops and other spoilage".

"I was given one metal silo for free and bought another one and PICS bags myself. I have two metal silos and some PICS bags. As I need more storage, I have ordered another silo which can store ten quintals of grain".

"Every farmer in my community wants to have the training, PICS bags and metal silos. It would be easier to have the storage facilities for everyone if loan schemes could be arranged through farmers' cooperatives".



CASE STUDY

"Improved grain storages maintain crop quality, improve our income and reduce the burden on women."

Crop loss begins during the postharvest process and continues throughout all other subsequent stages – harvesting, drying, threshing, transportation and storage. An assessment of postharvest losses in the project areas has indicated that maize, wheat, sorghum and haricot bean losses are significant. Maize and sorghum losses, for instance, were estimated to be 16.7 and 24.8 percent respectively. These levels of loss are similar to the findings of the earlier studies conducted in the country covering maize, wheat, sorghum and haricot beans.

The project worked with smallholder farmers across four regions of Ethiopia to capacitate farmers and government institutions with the required awareness and technology to reduce postharvest losses. A beneficiary family shares below how the project made a difference in their lives.

Shemelash Terefe, 54 and Nitsuh Seneshaw, 45 live in Marzeneb Community in Amhara Regional State. The family relies on farming and a few heads of livestock. They mainly grow wheat and maize on their 2.5 hectares of land and harvest up to 60 quintals a year.

Nitshu says, "For years, we were making and using traditional grain stores, such as *gota* and *gotera* from mud and sticks. However, the traditional storage containers do not prevent pests or rodents. As constructing these facilities is a woman's job, there was this huge burden on me to make and maintain them. It takes me four weeks to make a single storage facility. It is a step by step process to make the entire storage construction and it sometimes collapses. Every now and then, I have to remove spoiled grain and discard it."

Shemelash says, "We used to sell much of our produce right after harvest to avoid losses due to pests. As other farmers in our area do the same, we sell at cheaper prices."

"Pests normally started attacking from the base of the storage, so it is difficult to check the status of the crop at early stage of pest attack. We sometimes found the entire grain affected by pests and we removed the whole stock. We sometimes use pesticides to prevent pest infestation. However, it was not convenient to use this grain for food or to sell at the market. It was tiresome for women to wash and remove the pesticides from the crops. Buyers pay less for grain mixed with pesticides, and we were always worried about the risks of using pesticides."

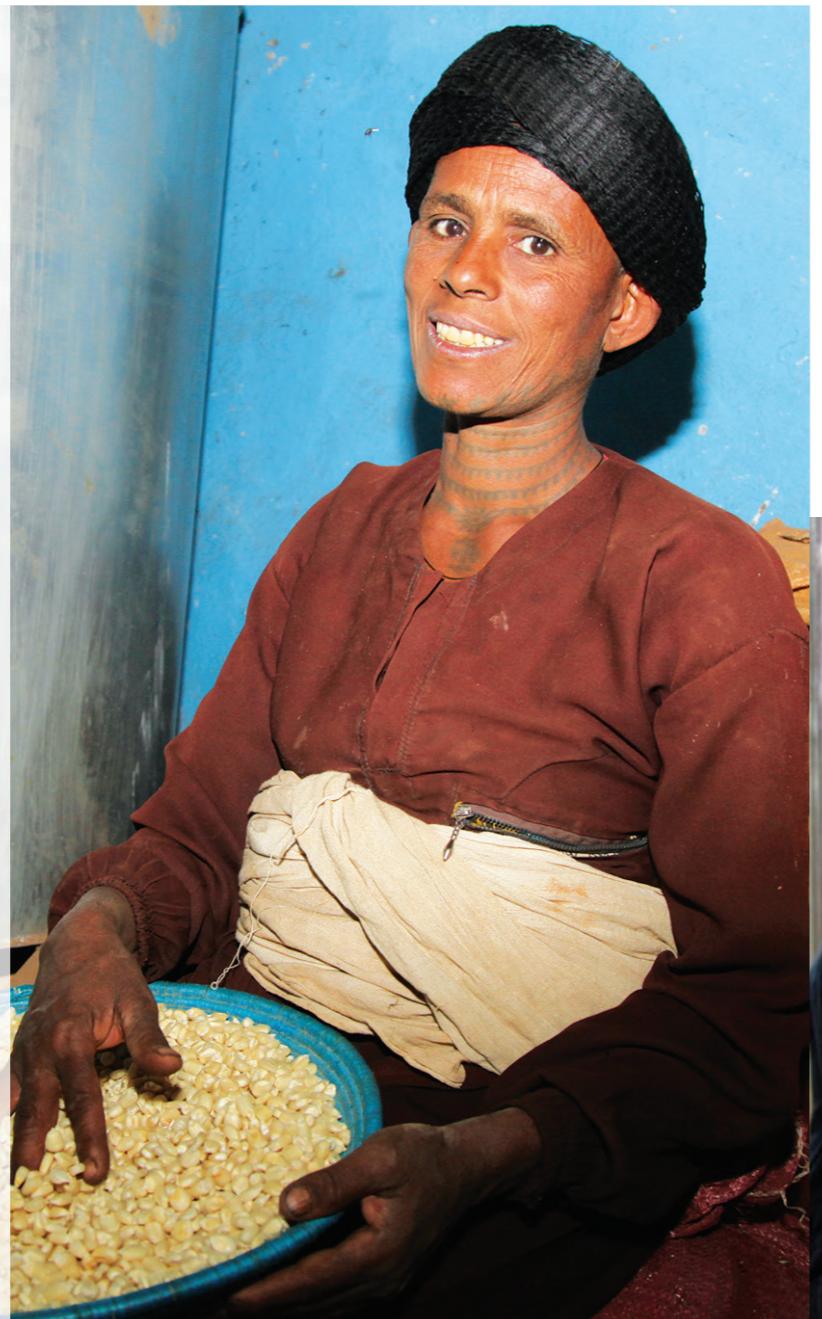
"Our district Bureau of Agriculture introduced to local farmers a project which helped us in reducing crop losses after harvesting. We were happy to participate in the project."

"Together with other farmers, we were organized into a farmers' cooperative. We received training on increasing crop production and reducing post-harvest losses. We learned how to use improved grain storage facilities and the precautions we need to take right from the time of harvest to the time the grain goes market or is consumed."

"I received two metal silos of three and six quintals capacity and PICS bags. I have used them for two years and they have proved their effectiveness. The quality of the crop was maintained and we are not worried any more about pest or rodent attacks. We use chemical-free grain for food and sell some of it in the market. In the market people easily identify crops attacked by pests and applied with pesticides. Buyers prefer to pay for the crops stored in the improved storage facilities. We managed to sell clean grain for good price. We do not apply pesticides as we seal the silos air-tight to kill any pests inside."

It is easier to put in and take out grain. Learning the benefits, I have already ordered a metal silo which has a 10-quintal capacity".

"All the cooperative members received training and improved crop storage facilities. We learn from each other and have regular meetings to share experiences to improve crop production, reduce postharvest losses and prevent pests. We pass on what we learn to non-member farmers. I have trained five farmers myself on how to reduce after harvest losses using metal silos. Many farmers are interested to learn and order metal silos."



CASE STUDY

Improved grain storage producers - we are happy to be a part of the solution to local problems.

A youth group comprising four members was established three years ago in Durbete, South Achefer District with the support of a project which aims to build the capacity of farmers and extension workers to reduce post-harvest food losses. These young people were drawn from rural communities and were unemployed despite having completed vocational training on metalwork engineering.

The young men were first given training on how to make improved grain storage containers (metal silos) using sheet metal which maintained the quality of crops by preventing spoilage caused by pests, rodents and mould.

The group members explained, "We learned how to make quality metal silos at Melkasa Research Institute. Following the training, the project supported us with the required tools and inputs to start making metal silos ourselves. The local government supported us with providing a workshop site. The local Bureau of Agriculture supported us with improving the quality of the containers and promoting the products among farmers."

"During the first round we made 67 metal silos, each which had a capacity of six quintals. The project purchased and distributed them to farmers, and during the second round we received a loan of 60,000 ETB (approximately USD 2 181) which we used to buy materials ourselves to make 138 metal silos, which were then distributed to farmers through the project."

"The demand for the metal silos is growing gradually as farmers are learning about their benefits. Based on the interest of farmers we

designed new types of silos by increasing the capacity to eight and ten quintals. As the demand is growing, we made and supplied 36 new metal silos to respond to direct orders from the local farmers."

"To promote our work we attended farmers meetings and trade shows to share what we learned from the training and the benefits of metal silos. We recently participated in a "Feed the Future" agriculture fair show. We promoted the benefits of metal silos and managed to enlist 40 farmers who wanted to order metal silos in the future."

"We have purchased more tools to expand our products to other local needs including flour bags and other metal works. Our capital is growing gradually and estimated it to be nearly 400 000 ETB (approximately USD 14 545)."

"It is a challenge to make and sell metal silos for a low cost. The price of sheet metal increases from time to time. If loan schemes are facilitated for farmers we can avail the technology for more farmers".

"By doing our job we are doubly satisfied. Through the project we have an employment opportunity. We are happy that we work in our own community. We invest our time and skills into our business, which we dream of transforming into a manufacturing industry. Secondly, we learned new skills and are a part of the solution to a local problem. We are happy to contribute towards the benefit of our own communities. We are encouraged by the feedback we received. Many farmers tell us that metal silos have prevented grain loss and reduced the burden on women."



Project contribution to SDGs and Strategic Objectives

This project directly contributes to the following Sustainable Development Goals (SGDs)

- Goal 1: No Poverty
“End poverty in all its forms everywhere.”
- Goal 2: Zero Hunger
“End hunger, achieve food security and improved nutrition and promote sustainable agriculture”
- Goal 5: Gender Equality
“Achieve gender equality and empower all women and girls.”

Furthermore, the project is aligned with FAO Strategic Objective and organizational outcome:

- SO4: Enable more inclusive and efficient agricultural and food systems
- Organizational Outcome 4.2: Agri businesses and agri food chains that are more inclusive and efficient are developed and implemented by the public and private sectors



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