



©FAO Eritrea

IMPROVING GRAIN POST-HARVEST HANDLING AND STORAGE FOR SMALLHOLDER FARMERS IN ERITREA

August 2022

SDGs:



Country: Eritrea

Project Code: TCP/ERI/3705

FAO Contribution: USD 200 000

Duration: 23 October 2019 – 31 December 2021

Contact Info: FAO Representation in Eritrea
FAO-ER@fao.org

Implementing Partner

Ministry of Agriculture (MoA).

Beneficiaries

Ministry of Agriculture (MoA); smallholder farmers.

Country Programming Framework (CPF) Outputs

CPF 2017-2021 - Priority 2: Improved agriculture sector production, productivity and market access for an enhanced food security and nutrition.

Strategic Objective (SO) 2: Make agriculture, forestry and fisheries more productive and sustainable.

Output 2.1.1: Innovative practices and technologies piloted, tested or scaled up by producers, to sustainably increase productivity, address climate change and environmental degradation.

SO1: Contribute to the eradication of hunger, food insecurity and malnutrition.

Output 1.2.1: Capacities of governments and stakeholders are improved for food security and nutrition governance.

FAO Regional Initiative: Africa's Renewed Partnership to End Hunger by 2025.



BACKGROUND

Eritrea faces post-harvest losses (PHL) of approximately 30 percent across most, if not all, its staple grain harvests. Post-harvest losses impact the entire country's economy, but most directly smallholder farmers and their families. Initial data indicates that there are an estimated 500 000 smallholder farmer households in Eritrea, and approximately 450 000 to 500 000 hectares of land are cultivated. However, due to traditional farming practices and consecutive droughts, production does not usually meet consumption requirements. Low agricultural productivity is one of the major challenges, which, combined with PHL, is the major factor giving rise to the necessity to import foodstuffs.

Against this background, the project aimed to address significant PHL in the country caused by poor handling, drying and storage, and to contribute to increased self-reliance of agricultural communities. This would be achieved through the provision of post-harvest handling training and household hermetic storage equipment.

IMPACT

The project contributed significantly towards the achievement of SDGs 1 (No Poverty) and 2 (Zero Hunger) and their targets, by reducing post-harvest loss and enhancing production. Indeed, PHL in the country was reduced by 10 percent as a result of the project interventions.

It is expected that participating families will have increased incomes, improved food availability in lean seasons, enhanced nutrition and health, better schooling for children, as well as a reduction in women's workload and an improvement in their socio-economic status.

ACHIEVEMENT OF RESULTS

Initially, the project was to be implemented in three phases; however, this was impeded by the COVID-19 challenges and the unavailability of funds, and only the first phase of the project was executed. Despite these issues, the project achieved a significant impact on its beneficiaries by providing PHL materials and targeted training. Overall, 16 800 hermetic bags, 2 210 silos and 13 295 tarpaulins were distributed to more than 6 000 beneficiaries; and government staff members and farmers were trained in the use of hi-tech PHL storage materials. The grain storage was greatly appreciated by all the stakeholders, comprising farmers, the MoA and academia.

In order to strengthen the capacity of smallholder farmers on improved grain post-harvest handling and storage, over 7 000 farmers were trained in post-harvest handling, significantly exceeding the originally envisaged number of beneficiary farmers. A training of trainers (ToT) was organized, which was attended by 48 agronomy experts from four regions, who went on to train another 480 experts (ten each) from all the *subzobas* of the four targeted regions, and these MoA experts trained over 7 000 farmers.

Twenty silos and 40 hermetic bags were procured and distributed to the National Agricultural Research Institute (NARI) of the MoA and Hamelmalo Agricultural College (HAC), to ascertain whether the storage materials were viable for seeds. It was envisaged that both the NARI and HAC would report on the findings they reached, regarding the viability of the storage materials for seeds. The PHL storage materials were found to be viable for seeds in the report conducted by the NARI. However, HAC was unable to undertake this activity due to various constraints encountered.

Monitoring and evaluation (M&E) of post-harvest loss reduction activities were effectively carried out through the supervision of the MoA and FAO, as well as the World Food Programme (WFP). FAO M&E experts and MoA senior agronomists also carried out a final PHL impact assessment. It was found that the project had a substantial impact on the beneficiaries who received the materials. However, there is still a great need for grain storage materials by the farmers.

IMPLEMENTATION OF WORK PLAN AND BUDGET

The activities involved mostly training and procurement, for which a Letter of Agreement (LoA) was signed between FAO and the MoA for the daily subsistence allowance (DSA) and associated expenses, and the money was transferred to the Ministry. The training of government staff and farmers was undertaken in a timely manner, so that the distribution could be carried out on time, as the harvest season was under way in some places. A three-month no-cost extension was requested and approved, in order to complete outstanding activities. The activities were completed within the planned budget.

FOLLOW-UP FOR GOVERNMENT ATTENTION

The programme is expected to continue until the harvest loss has been further alleviated. The MoA, FAO and WFP are planning to conduct the baseline and endline for the PHL impact assessment in the near future, as it was only possible to complete it with qualitative data during the project. It is also expected that WFP will seek additional funding to undertake the second phase.

It is envisaged that the MoA will provide refresher training for its staff and the beneficiary farmers. In addition, it is expected that the Government, through its line ministry, the MoA, will sensitize its farmers and enhance the reduction of PHL in the country, by further extending the technology transfer to its farmers.

SUSTAINABILITY

1. Capacity development

With regard to the relevant policies and legal framework in place or under development supporting the sustainability of the project outcome, the project remains sustainable owing to the MoA's good policy and strategy towards reducing PHL, as was clearly established in their Five-Year Strategic Plan (2021–2026).

The Government, through the MoA, can maintain the sustainability of the results of the project; in addition, it intends to manufacture the storage materials locally, so that they can be easily accessible to the farmers, instead of continuously importing them from abroad.

The MoA staff's responsibilities also extend to administrative localities (Kebabi Adi), and they are always highly organized and well-equipped, thus also ensuring the sustainability of the project.

2. Gender equality

All the activities effectively met the needs and priorities of the women and men beneficiaries in the first phase of the project. Gender equality was a core concern; thus, when the project was launched, at least 40 percent of women were included from each region, thereby benefiting 2 000 female-headed households or women.

3. Environmental sustainability

The storage materials were designed to be environmentally friendly. Indigenous knowledge of the preservation of grains from pests, including fumigation and other mechanisms, was also encouraged.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project was designed to support the rights and privileges of all vulnerable farmers, particularly women.

5. Technological sustainability

In terms of the technology used/introduced by the project being appropriate/flexible, the Government and the beneficiary farmers liked the technology transfer, and in some areas, a few farmers have been utilizing the new system. The Government is planning to seek ways to manufacture the storage materials locally to satisfy the local markets, as well as ways of sustaining the technology.

The project contributed significantly to the local knowledge and good practices of the beneficiary farmers, who quickly grasped the new procedures and practised them easily. Some farmers even became good propagators of the new technology to farmers in their areas.

With regard to the capacity of stakeholders and beneficiaries to pursue the project activities without further technical assistance, the Government, through the MoA, has capable and committed staff, who, as mentioned above, also work in administrative localities, following up and monitoring the activities. In the field of academia, the NARI and HAC are backing activities in research. Finally, the beneficiary farmers are very interested in taking care of their storage materials, although they are not enough to cover all the trained farmers.

6. Economic sustainability

With regard to the products and services developed by the project being affordable, the beneficiary farmers, especially those who participated in the training on storage management, were very willing to purchase the storage materials, which were affordable for them.



DOCUMENTS AND OUTREACH PRODUCTS

Documents

- ❑ **FAO & WFP.** 2019. *Grain Post-harvest Loss Storage Manual translated in local language, Tigigna.* 44 pp.
- ❑ **FAO & WFP.** 2019. *Grain Post-harvest Loss Storage Manual translated in local language, Tigre.* 47 pp.
- ❑ **MoA, FAO & WFP.** 2022. *Eritrea Zero Food Loss Initiative: PHL impact assessment in Eritrea.* 23 pp.
- ❑ **MoA & National Agricultural Research Institute (NARI).** 2022. *PHL report on the viability of the Storage Materials for Seeds.* 11 pp.

Outreach products

- ❑ **FAO, WFP & MoA.** 2019. Post-harvest stickers.



ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

| | | | |
|--|---|--|-----------------|
| Expected Impact | Improved household food security/nutrition and marketable surplus through reduction of post-harvest losses of selected cereals and pulses | | |
| Outcome | Reduced post-harvest losses for participating Eritrean farmers through the provision of post-harvest handling training and household hermetic storage equipment | | |
| | Indicator | Reduce the current post harvest loss by 20%. | |
| | Baseline | 30% | |
| | End Target | 10% | |
| Comments and follow-up action to be taken | Over 6 000 farmers were provided with either one silo and two tarpaulins, or four hermetic bags and two tarpaulins. Initially, the PHL programme was to be implemented over a three-year period and in three phases; however, this was impeded by COVID-19 challenges and the unavailability of funds, and only the first phase of the project was implemented. Despite this fact, the project achieved a significant impact on the beneficiaries through the provision of the PHL materials and training. The programme is expected to continue until the harvest loss has been alleviated. | | |
| Output 1 | Capacity of smallholder farmers on improved grain post-harvest handling and storage strengthened | | |
| | Indicators | Target | Achieved |
| | Number of farmers trained in Silos and hermetic bag management to reduce post-harvest loss. | 5 000 | Yes |
| Baseline | 0 | | |
| Comments | A total of 7 200 farmers were trained in post-harvest handling, exceeding the envisaged number of beneficiary farmers by 2 000. A ToT was organized, which was attended by 48 agronomy experts from four regions, who went on to train another 480 experts (ten each) from subregions, and these MoA experts trained over 7 000 farmers (15 each). It is expected that the MoA will provide refresher training for its staff and the beneficiary farmers. | | |
| Activity 1.1 | Post-Harvest Loss assessment analysis | | |
| | Achieved | Yes | |
| | Comments | The PHL in the country ranged between 30 and 40 percent, and was reduced by only 10 percent as a result of the project interventions. The overall reduction of 20 percent was expected to be achieved during the initially planned three phases of the project, which were reduced to one phase, owing to the various constraints encountered during the project. Further baseline and endline data are required, as it was only possible to complete the PHL impact assessment with qualitative data, due to time limitations. It is expected that the Government, through its line ministry, the MoA, will sensitize its farmers and enhance the reduction of PHL in the country by further extending the technology transfer to its farmers. | |
| Activity 1.2 | Procuring and distributing 20 silos and hermetic bags | | |
| | Achieved | Yes | |
| | Comments | Twenty silos and 40 hermetic bags were procured and distributed to the NARI and HAC, to ascertain whether the storage materials were viable for seeds. It was envisaged that both the NARI and HAC would report on the findings they reached, regarding the viability of the storage materials for seeds. The PHL storage materials were found to be viable for seeds in the report conducted by the NARI. However, HAC was unable to carry out this activity due to time limitations and a delay in seed procurement. | |
| Activity 1.3 | Training of Trainers for government extension staff | | |
| | Achieved | Yes | |
| | Comments | 480 MoA agronomy experts were trained from all the <i>sub-zobas</i> of the four targeted regions. Thus, 120 percent was achieved against the envisaged end target of 400. It is expected that the MoA will provide refresher training for its staff. | |
| Activity 1.4 | Smallholder farmer Training | | |
| | Achieved | Yes | |
| | Comments | 7 200 farmers were trained in all the <i>sub-zobas</i> of the targeted four regions, thereby achieving 140 percent against the envisaged end target of 5 000. No further training or refresher training was carried out. However, it is expected that the MoA will provide refresher training for the beneficiary farmers in the near future. | |

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

| Monitoring and evaluation of post-harvest loss reduction activities | |
|---|--|
| Activity 1.5 | <p>Achieved Yes</p> <p>Comments The project was well monitored through the supervision of the MoA and FAO, as well as the WFP (during the first stage). FAO M&E experts and MoA senior agronomists carried out the final PHL impact assessment. It was found that the project had a substantial impact on the beneficiaries who received the materials. However, there is still a great need for grain storage materials by the farmers.</p> |

Partnerships and Outreach

For more information, please contact: Reporting@fao.org

Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla

00153 Rome, Italy

©FAO, 2022

CC3343EN/1/12.22