

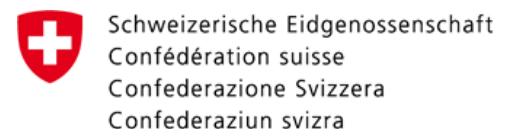


Adoption of Improved Post-Harvest Management Practices and Technologies in the Central Corridor of Tanzania

Key Achievements and Lessons from the Grain Post-Harvest Loss Prevention (GPLP) Project in Tanzania (2013 – 2020)

Key Messages (and Achievements)

- *Post-harvest management works: 125,601 smallholder grain producers adopted various post-harvest practices and technologies as direct beneficiaries of the GPLP project.*
- *Quality on-farm storage of maize makes a difference for small farm households: Project beneficiaries adopted 3,690 metal silos, 253,712 hermetic bags between 2015-2019.*
- *There are socio-economic benefits from improved post-harvest management and on-farm storage: The introduced silos and hermetic bags allow to store annually 27,216 tons of maize, of which 15% (4,082 tons) can be taken as saved (gained) grain due to reduced losses.*



Swiss Agency for Development and Cooperation SDC

1. Background

The Grain Post-Harvest Loss Prevention (GPLP) project, an initiative of the Swiss Agency for Development and Cooperation (SDC), has been implemented between 2013 and 2020 by HELVETAS Swiss Intercooperation and its partners in four regions of the Central Corridor of Tanzania. GPLP aimed to increase food security and incomes of farming households through improving post-harvest management (PHM), i.e. mainly post-harvest practices (PHP) and technologies (PHT) for maize. The GPLP project applied a market system development approach, thereby working with public and private sector partners to create PHT demand.

To ensure an increased adoption of improved PHP and PHT, GPLP applied a systemic approach where it focused mainly on interventions that would trigger demand and ensure supply of PHP and PHT. In this way, the project managed to address some of the market failures like limited knowledge and information on the improved storage technologies, which hindered adoption of improved PHP and PHT. The improved PHP promoted by GPLP included on-time and proper harvesting, transportation and pre-storage drying, while the improved PHT included mainly drying technologies such as use of tarpaulins and storage of grain in hermetic bags and metal silos. To enhance adoption, these practices were promoted through training in farmer groups, village level awareness and promotion events, household level storage demonstration events and mass media campaigns at regional and national level. These interventions were mainly coordinated using private sector players and, in some cases, involved public sector partners. Furthermore, there was the development of post-harvest management by-laws at district level to reinforce adherence to improved PHP and PHT by farmers and other actors in the post-harvest value chain.

2. Achievements of the GPLP Project

- 150 agro-dealers are selling PHT in the project areas (85% of all agro-dealers in project areas)
- The Government developed in collaboration with PHM stakeholders the National Post-Harvest Management Strategy (NPHMS) and prepared an implementation plan

- 3 PHM by-laws were approved and are now in use in three districts
- 2 district forums formally registered and will continue advocating for PHM and monitor the implementation of the by-laws
- One national platform registered to coordinate PHM actors in the country and monitor the implementation of the NPHMS
- PHM compendium developed as a tool to help tutors impart knowledge to extension officers
- PHM has been integrated into the agriculture curriculum for the training of extension officers
- Tutors from 28 Ministry of Agriculture Training Institutes were capacitated on PHM and how to impart practical knowledge to students.
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3. Key Lessons Learnt

A mix of different approaches is required to trigger adoption of improved PHP and PHT.

GPLP used different means to create demand for PHP and PHT and to ensure supply of PHT. These interventions included awareness creation at organized events at village level and mass media campaigns at regional and national level, knowledge enhancement through PHM training in farmer groups and demonstrations of grain storage at household level. Private sector actors (agro-dealers, artisans, media agencies) who collaborated closely with the public sector, mainly Government extension workers while GPLP took a facilitative role. Although the originally planned farmer-to-farmer exchange did not work well, feedbacks from stakeholders showed that the approaches were instrumental in creating demand and ultimately increasing adoption of improved PHP and PHT. Partners' timing of the interventions by observing the crop calendar of the region/area enhanced in-time PHM interventions as well as availability and adoption of PHT. Agro-dealers and artisans in collaboration with extension officers conducted cost-benefit analyses of both, metal silos and hermetic bags in relation to conventional storage during sensitization meetings and training. PHM training was more associated with higher adoption of PHP, while the adoption of hermetic bags was mainly witnessed through the awareness campaigns, and the metal silo adoption was influenced by the storage demonstration events organized in households where farmers could see

by themselves how it works. Adoption of metal silos was mainly done by households to store grains for home consumption, while the hermetic bags were used for both to store grain for sale at a later stage as well as for home consumption.

1) **Farmers considered different, combined factors to select and adopt improved PHP and PHT.** Key factors influencing the decision on the post-harvest practices and technologies to be adopted were:

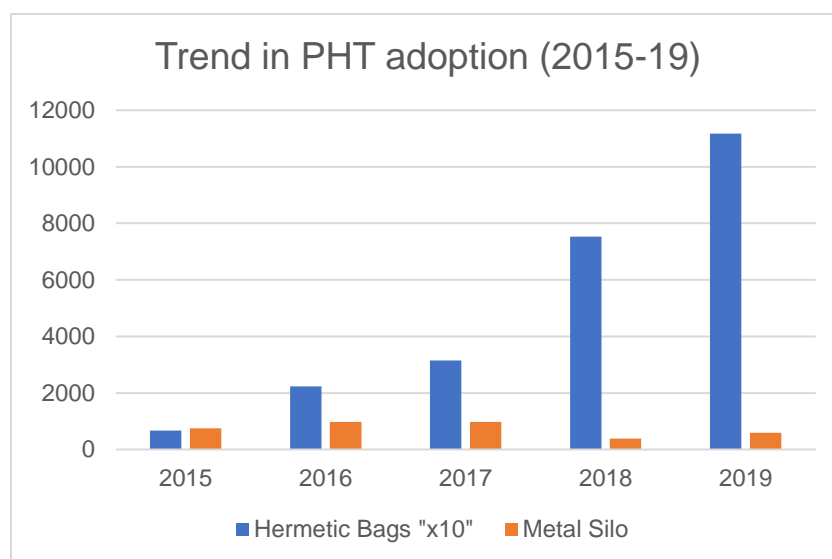
household food security, (non-) use of pesticides, type of crop, application and use of PHP/PHT, quantity of harvest and time needed to store before consuming or selling, household income level, availability and easy access to PHT, and expected market price at later stage are. Hence, as a result:

- In Shinyanga where most farmers produced sorghum, a threshing machine was key as it simplified the work.
- In areas where harvested amounts were small, feeding the household for few months only, farmers opted for normal polypropylene bags or traditional facilities to store their crop.
- In larger households where the harvest was good and relative income higher, likelihood that farmers adopted metal silos to store grains for home consumption was higher.
- Proximity to inputs provided by agro-dealers and artisans strengthened PHT adoption.



Kudra Hassan, a farmer in Mnenia village, Kondoa district, Tanzania showing her quality maize after storing it in hermetic bags for one year

2) Adoption rates for PHT did not follow a linear pattern. In the first of phase I, GPLP witnessed slow adoption rates as improved PHT were new to the market. More efforts were still required to create awareness among farmers. GPLP used the market systems development approach where it engaged market actors to create demand and ensure supply of PHT to farmers. The various market actors were key in influencing demand through their proper understanding of this market approach and their respective roles in it. Both, approach and role, were new to the engaged agriculture input providers, and many did not see PHT as key products to be added to their product chain. Understanding that the right actors were key to trigger higher adoption, the GPLP project went through several coaching and review processes with these input providers, which yielded good results. Hermetic bags were already in the market before the project started, but they were not much known by the farmers and community. Feedback from hermetic bag producers showed that GPLP interventions and its partnership with the bag producers have increased awareness among farmers, and this ultimately influenced the expansion of the hermetic bag market. PHT adoption between 2015 and 2019 show a promising future for the hermetic bag business. Adoption of metal silos went down from Phase I to Phase II as the seed money/revolving fund system and on-farm demonstrations with subsidised silos were not further expanded. Yet, silo adoption recovered in 2019 with increased involvement of agro-dealers as suppliers. Overall, the project observed an increasing number of new market actors interested in selling PHT, indicating that the supply network will expand and more farmers will have access to these post-harvest technologies.



Trends of PHT (hermetic bags & metal silo) adoption

4. Conclusion and recommendations

Using PHM awareness and promotion campaigns is crucial to influence demand and ultimately the adoption of improved PHT and PHP. As there is a business case for agricultural input providers, engage them in awareness creation to farmers by using village meetings as platforms to promote PHT. Involve local medias (radios, press) in collaboration with agricultural input providers in PHM campaigns.

Favourable policy and tax environments can boost the adoption of improved PHT by farmers. Reduced prices for metal silos and hermetic bags would increase adoption of PHT. The Government should consider removing import tariff for metal sheets used to produce metal silos and exempting hermetic bags from VAT.

Private sector partners need their freedom to engage in PHT business.

To create more ownership by private sector actors who engage in PHT business and PHM promotion, their starting point should focus on high potential farming areas. GPLP chose its project areas mainly based on the aspect of improving food security; therefore, choosing areas with lower grain production. On the other hand, private sector actors such as agro-dealers are interested in sales and making business. They would therefore choose intervention areas where production is higher and where there is potential market. Finding a balance between these objectives is key for the PHM input markets and the ultimate adoption of improved PHP and PHT.

You may also be interested in the other GPLP CAPEX briefs: Access to Finance Model to Boost Investment in Improved On-farm Post-harvest Storage Technologies / The Post-Harvest Management Business Model / Policy Advocacy in Post-Harvest Management / Introducing a New Grain Storage Technology in Tanzania - The Case of Metal Silos at Household Level. They can be found under <https://www.helvetas.org/en/tanzania>