

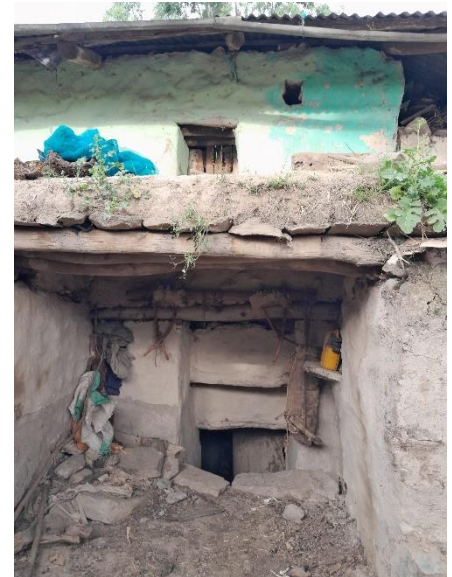
PRACTICE ABSTRACT n° 29

Smart Storage System prototype Ethiopia

Post-harvest losses remain a significant challenge in agricultural production in developing countries where traditional storage methods dominate. These losses need to be halted in order to achieve food security and reduce economic and environmental inefficiencies.

We have conducted an innovative research evaluating various modern storage technologies involving 18 farmers in Laelay Machew/Axum district of Ethiopia. A randomized complete block design (RCBD) was used in the experiment with treatments of three store types (i.e. Galvanized iron silo, PICS bags, and traditional mud granary) in two storage houses categories (mud house and iron roofed house) across three locations (Debrebirhan, Hatsebo, and Lesaliso) in three replications. All storage types were filled in with the teff grains farmers obtained from the precision harvesting systems research in the same study locations.

Our study found that storage types emerged as highly significant across all response variables, indicating to the prevalence of heterogeneous individual management practices. Farmer storage practices across all locations were significantly different that localized storage strategies tailored to specific agroecological. Moreover, Lesaliso had the highest mean storage temperature at 21.42°C than Hatsebo (20.59°C) and Debrebirahn (20.23°C). Conversely, Debrebirhan and Hatsebo had higher relative humidity than Lesaliso which



Traditional mud house

tend to increase grain moisture content favouring occurrence of moulds and pests. This study indicates that storage management practices (ventilation and/or insulation) to regulate high temperature effects, and dehumidifiers and desiccators to regulate moisture levels are important. As part of the national food security programmes, integrated storage handling and monitoring systems, and smart storage measures need to be developed to mitigate post-harvest loss in the developing countries of Africa.



Galvanized iron silo