

Farm-level improved frugal storage options



# 1. Pioneer partnership

2SCALE entered into a partnership agreement with Tays Food Limited (TFL), a Nigerian company in 2019 following a successful pilot (in 2018) to test the inclusive business model of the company, which was to competitively integrate smallholder farmers in the onion value chain. TFL aims to sustainably aggregate and market 10,000 tons of fresh onions annually. This presents an opportunity for integrating at least 5,000 smallholder farmers into this supply chain which provides a guaranteed market for them all year round. To achieve this aim, 2SCALE provides support to foster farm level productivity as well as building capacity of cooperatives to supply onion in bulk.

A major constraint identified in this partnership is post-harvest losses experienced by farmers especially during high production periods. Farmers lose as much as 50% of their onions by depending on traditional storage systems, which are highly ineffective. This affects their capacity to supply the quantity and quality of onions required by TFL. In 2019, 2SCALE introduced and supported the adoption of an improved onion storage system to help reduce these losses and increase farmers' incomes, while ensuring increased supply of onion to TFL.



Sokoto Improved Model storage has helped minimize post-harvest loss

## 2. Replicable practice

Inspired by the Senegalese traditional system of onion storage, 2SCALE designed a prototype (using locally available materials) of the Sokoto Improved Model (SIM) of onion storage that was tested with selected lead farmers initially, and upon successful evaluation and further adjustments, was rolled out in several clusters. The SIM model which is an improvement of the Senegalese model, is built with galvanized iron poles and a wooden frame and covered with iron mesh. Heat radiation is reduced by covering the ceiling with Zana—grass mat. The entire structure is raised above the ground and equipped with doors for easy monitoring. Shelves are constructed to ensure not more than three levels of onions are stacked over each other.

This improved model ensures good ventilation for the proper inflow and outflow of air, thus maintaining temperatures within the recommended range. It has a storage capacity of up to 21 tons (175 bags). It has already been introduced in eight onion clusters in Sokoto state and proven to be effective in extending shelf life of onions over the traditional methods of storage. The traditional storage structure can only store onions for a season (3-4 months) after which it would not be fit for use again. Unlike the Sokoto Improved Model (SIM), which can store onions for between 4-6 months and the storage structure could be put in use for more than 5 years with proper maintenance.

To summarize, this practice is addressing constraints in terms of:

<p>Access to nutritious food</p>	<ul style="list-style-type: none"> <li>• <b>Availability:</b> Onion supply and availability is affected by its seasonality. During periods of short supply, onions are often imported from neighbouring countries affecting availability and access to the product. With the introduction of this innovation, farmers are able to store more onions both for household consumption and sale to the market. Consumers have easy access to onions due to its availability within their communities.</li> <li>• <b>Affordability:</b> Prices of onions are often high during the off-season. The SIM storage ensures that a more stable supply of onion is achieved throughout the year, which could facilitate a more stable price in the market.</li> <li>• <b>Appropriateness:</b> SIM is a non-chemical storage system; thus, onions are safe for consumption and can be sold any time due to the extended shelf life. The nutritional value of onion is also maintained.</li> </ul>
<p>Inclusion</p>	<ul style="list-style-type: none"> <li>• <b>Voice:</b> Farmers can negotiate for better prices when they are able to maintain the quality of their onions. They can also negotiate for better terms when signing contracts with buyers.</li> <li>• <b>Risks:</b> With a stable supply, farmers are able to reduce market-related risks such as price fluctuations. They can plan when to sell and organize other logistics that are required to get the onions to the market. Rejections are also less likely due to the improved quality of stored onions.</li> </ul>

# 3. Preconditions for replication

## **Availability of construction materials**

The SIM model is constructed using locally available materials including galvanized iron poles, iron mesh, roofing sheets etc. Suppliers of these materials should be identified and linkages established with farmers.

## **Financing arrangements**

The cost of a unit of the SIM model is approximately N125,000 (USD300) but this cost could be reduced to between N80,000 – N100,000 (USD192-USD240) if directly constructed by local artisans. This might be high for most farmers and they will not be able to make up front payments to construct one. Arrangement with a financial service provider will ensure more farmers can access the innovation through a credit system.

## **Training of interested young entrepreneurs**

The SIM model though simple to construct requires some training. In Nigeria, selected youth were trained and equipped to construct the structures for interested farmers. The training also included post-harvest management to ensure farmers apply other complementary practices that are required to achieved high impact.

## 4. Results Achieved

- Extended the shelf life of onions from 3 months to as long as 6 months.
- Reduced post-harvest losses from 50% to 20%.
- Trained 40 youths (five per cluster) youth who are offering advisory services to farmers in post-harvest management and construction of new SIM structures.



## Want to know more?

To know more about this practice, please reach out to Emmanuel Akinwekomi, Horticulture Partnership Facilitator, [EAkinwekomi@2scale.org](mailto:EAkinwekomi@2scale.org).

# 2SCALE

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