

Technology Fact Sheet for Adaptation

A Seed and grain storageⁱ

Technology: Seed and grain storage	
Technology characteristics	
Introduction	Cereals, pulses, oilseeds etc. are very important grain products for storage. Good storage helps ensure household and community food security until the next harvest and commodities for sale can be held back so that farmers can avoid being forced to sell at low prices during the drop in demand that often follows a harvest. While considerable losses can occur in the field, both before and during harvest, the greatest losses usually occur during storage. Therefore the basic objective of good storage is to create environmental conditions that protect the product and maintain its quality and its quantity, thus reducing product loss and financial loss. Only well-dried seeds should be stored. Seeds with moisture in them become damp, moldy and vulnerable to insect attacks.
Institutional and organizational requirements	In Rwanda, the implementation of efficient seed and grain systems would be facilitated by several institutions/agencies. These include: The Ministry of Agriculture and Animal resources- Rwanda Agriculture Board for technical training, The Ministry of Commerce - Rwanda Bureau of Standards for health and safety regulations and quality control guidelines, local financial institutions-BRD for funds mobilization and farmers' associations who are indeed the first beneficiaries. Health and safety regulations and quality control guidelines should be elaborated by the relevant national authority. Standardized training and inspections may also be undertaken by a government agency.

Size of beneficiaries	1 400 000 households
Operation and maintenance	Requires high initial investments costs, operation and
Advantages	The establishment of safe, long-term storage facilities
Disadvantages	1. Difficulties in achieving the desired freedom from
Capital costs	
Cost to implement adaptation	To install storage capacity of one ton in a good seed and
Additional cost to implement	The average cost of one addition unit (ton) is 8 \$/ton
Development impacts, indirect benefits	
Economic benefits	
Employment	Jobs are obtained in storage systems installation, operation and maintenance.
Investment	Investments opportunities exist in manufacturing and supply of in storage systems components and spare parts.
Public and private expenditures	A lot can be saved on seeds and grain importations.
Social benefits	
Income	Through the selling of their products at a reasonable price some time after harvest time, farmers earn extra income.
Learning	With this income farmers can send their children to school
Health	Well contained and stored grain would protect humans against storage pests such as insects, fungi etc
Environmental benefits	
Grain storage has been established to prepare for droughts and hunger and malnutrition (UNEP, 2010). Grain storage provides an adaptation strategy for climate change by ensuring feed is available for livestock and seed stock is available in the event of poor harvests due to drought (UNEP, 2010). Efficient harvesting can reduce post-harvest losses and preserve food quantity, quality and the nutritional value of the product (FAO, 2010). Innovations for addressing climate change include technologies for reducing waste of agricultural produce (BIAC, 2009). In fact, the establishment of safe storage for seeds and reserves of food and agricultural inputs are used as indicators of adaptive capacity in the agriculture sector (CARE, 2010)	
Local context	

Opportunities	• Existing storage techniques are fragile and not reliable • Improved storage infrastructures are generally absent and yet producers need them • There is a possibility to keep surplus produce stored away rather than having to sell any extra produce immediately • There is a possibility to sell any extra produce • There is increased profit through improved storage • Already some storage facilities have been installed countrywide which makes available knowledge and skills to implement the new technology • There exist benefits against investment on time, money and effort in improving storage.
Barriers	Produce has to be sold off immediately to pay off debts to landowners or creditors
Market potential	Seed and grain storage systems can be applied from small to large scales. In Rwanda, the technology has potential nationwide.
National status of the technology	Only very few installations (one in the eastern province, one at RAB premises in Kigali city, one at Bakheresa grain milers, two in the northern province) are in place for the whole country
Timeframe	The technology can be implemented immediately
Acceptability to local stakeholders	Well accepted by the local population

ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment and Technology Action Plans For Climate Change Adaptation– Rwanda. You can access the complete report from the TNA project website <http://tech-action.org/>