



HIB Compact Technologies Toolkit

2 TECHNOLOGIES | CREATED ON AUG 22, 2025 BY TAAT PROFILING TEAM | LAST UPDATED OCT 24, 2025



TECHNOLOGIES IN THIS TOOLKIT

- **HIB varieties:** Biofortified Beans for Improved Nutrition
- **PICS:** Hermetic Bags for Safe Storage of grain



<https://taat.africa/muy>

HIB varieties: Biofortified Beans for Improved Nutrition

Fueling Health with Iron-Rich Beans



"Biofortified Beans for Improved Nutrition" technology develops high-iron bean varieties via biofortification to combat deficiencies in Sub-Saharan Africa. With 31 released varieties, it enhances regional food security and nutrition.



This technology is **TAAT1 validated**.

8-7



Scaling readiness: idea maturity 8/9; level of use 7/9

Gender assessment

4

Climate impact

7

Problem

- Iron and zinc deficiencies leading to: Anemia, Impaired motor and cognitive development, Increased risk of maternal death and premature births, Low birth weight
- Weakened immune systems
- Increased susceptibility to infections
- Stunted growth

Solution

- Development of high-iron bean varieties through biofortification.
- Crossbreeding local elite lines with American bean varieties naturally rich in iron.
- Resulting in High-Iron Beans (HIB) with traits including: High productivity, Drought and disease tolerance, Preferred culinary characteristics, Quick cooking.
- Release of 31 HIB varieties in key production areas across Sub-Saharan Africa
- Enhanced food security and nutrition in the region.

Key points to design your project

Project activities include raising awareness, providing seeds, linking producers to markets, promoting demand, and establishing incentives.

Costs involve seed estimation, delivery, training, communication support, and collaboration with agricultural institutes and seed companies for implementation.



Open source / open access

Alliance



The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)
Justin Mabeya Machini

Technology from

ProPAS

Commodities

Common bean

Sustainable Development Goals



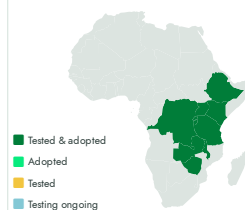
Categories

Production, Improved varieties, Quality improvement

Best used with

- [Seed dressing of Seed with Fungicide and Insecticide >](#)
- [Seed Inoculation with Rhizobia >](#)
- [Specialty Fertilizer Blends for Common Bean >](#)

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



HIB varieties

<https://taat.africa/pcw>

Last updated on 19 August 2024, printed on 15 May 2025

Enquiries e-catalogs@taat.africa

PICS: Hermetic Bags for Safe Storage of grain

Low cost storage technologies for grain

Hermetic bags are like super-sealed containers that stop air and moisture from reaching the grains inside. This way, farmers can store their grains for up to two years without them getting bad. This is good for farmers because it means they always have enough food and can sell their grains for better prices.



PICS

Purdue Improved Crop Storage

PICS GLOBAL

Laurie Kitch

Technology from

[ProPAS](#)

Commodities

Common bean, Rice, Wheat, Maize,
Sorghum/Millet, Soybean

Sustainable Development Goals



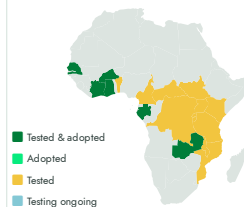
Categories

Prevention & storage, Equipment,
Post-harvest handling

Best used with

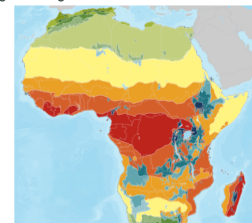
Mechanized Threshing Operations
See all 1 technologies online

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



✓ This technology is **TAAT1 validated**.

9-9



Scaling readiness: idea maturity
9/9; level of use 9/9

Inclusion assessment

4

Climate impact

5

Problem

- **Post-harvest losses:** Farmers in Sub-Saharan Africa lose over 25% of beans due to inadequate storage methods.
- **Pest infestations:** Weevils, moths, and mites damage stored beans, forcing farmers to sell at low prices immediately after harvest to minimize losses.
- **Fungal contamination:** Traditional storage can lead to fungal growth, such as aflatoxin, contaminating beans and reducing their quality.
- **Food security issues:** Ineffective storage hinders farmers' ability to keep enough beans for consumption between harvests, threatening food security and livelihoods.

Solution

- **Airtight sealing:** The multi-layer design blocks air and moisture, preventing pest infestations without chemicals.
- **Moisture control:** Hermetic bags maintain stable moisture levels, inhibiting fungal growth like aflatoxin.
- **Long-term preservation:** They preserve beans for up to two years, maintaining quality and cooking time.
- **High durability:** Made from strong, reusable materials, hermetic bags ensure reliable grain storage.

Key points to design your project

To integrate PICS bags into your project:

- **Cost Analysis:** Bags cost \$1 to \$1.5 each (50kg or 100kg capacity). Estimate the number needed.
- **Supply Chain:** Identify suppliers, including delivery costs and any import duties.
- **Training:** Budget for training sessions and ongoing support.
- **Communication:** Create promotional materials (flyers, videos, etc.).
- **Grain Preparation:** Ensure grains are properly dried before storage, using moisture measurement devices if necessary.

These steps will help enhance food security and reduce post-harvest losses.

Cost: \$\$\$ **2—3 USD**

Bag cost for users

ROI: \$\$\$ **90 %**

Reduction of loss

50 or 100 Kg

Bag capacity

2 year

Life span



Trademark



PICS

<https://taat.africa/oaw>

Last updated on 18 June 2025, printed on 18 June 2025

Enquiries e.catalogs@taat.africa



HIB Compact Technologies Toolkit

🔗 <https://taat.africa/muy>

ABOUT US

TAAT

TAAT, Technologies for African Agricultural Transformation, is an African Development Bank initiative to boost agricultural productivity by rapidly rolling out proven technologies to more than 40 million smallholder farmers.

TAAT aims to double crop, livestock, and fish productivity by 2025 by engaging both public and private sectors to expand access to productivity-increasing technologies across the continent. TAAT advises African government who receive funding from international financial institutions such as the African Development Bank to help them integrate the best agricultural technologies in their development projects. TAAT also offers technical assistance for the integration of these technologies, when needed.

TAAT Technologies

TAAT definition of agricultural technologies is very broad: they include improved varieties, inputs, equipment, agricultural infrastructure, practices and agricultural policies. In short, any solution to an agricultural constraint. TAAT technologies have been developed by a wide variety of organizations: the CGIAR, other international research institutions, national research organizations, or the private sector.

TAAT Clearinghouse

Within TAAT, the Clearinghouse has the remit to select, profile and validate agricultural technologies, and showcase them in online

catalogs to support the advisory role that the Clearinghouse offers to governments and the private sector. The Clearinghouse strives to be an 'honest broker' of technologies through its selection, profiling, validation and advice.

TAAT e-catalogs

The e-catalogs are designed to be used by decision-makers within governments, private sector companies or development organizations. They facilitate the search for appropriate solutions that are adapted to local conditions and requirements, and provide all necessary information, presented in jargon-free and easy to analyze technology profiles. Once a decision-maker has selected a technology of interest, the e-catalogs facilitate their direct contact with those who can help them implement the technology, whether they are a research group or a private company.

TAAT Technology Toolkits

Technology toolkits are hand-picked selections of technologies from the TAAT e-catalogs. We offer some curated toolkits for specific cases, and registered users can create their own toolkits, showcasing their selection of technologies. Toolkits can be used online and shared as links, as mini e-catalogs, they can also be downloaded, saved, shared or printed as collections of technology pitches in PDF format (pitches are one-page summaries of technology profiles, available for all technologies on the e-catalogs).

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