# Learning Brief

# Nutritionally Improved & Climate Adapted Seeds and Storage Technology

**Date:**
February 2022

**Title:**
Sustainably Improving Nutrition in Zinder through System Strengthening

**Country/ Region:**
Níger, Zinder

**Sector:**
Economic - Agriculture
Food & Nutrición Security

**Intervention Dates:**
From November 2020 to May 2022

**Costs:**

**Direct**:
Improved seed USD 23,004
Storage bags USD 7,800

**Statistics:**

**Malnutrition:**
49.5% of women of reproductive age are anaemic

47.7% of children <5 years are stunted

(*Global Nutrition Report, 2021*)

Millet, source: GOAL, 2021

## Nutritionally Improved Millet – a win, win, win

Naturally biofortified with Iron and Zinc to increase the nutritional value of what people already eat. Short maturing to reduce climate related risks. Higher yields for better return for farmers on their production investment – all contributing to increased food & nutrition security.

**Groundnuts & cow peas** are good sources of plant protein, adapted to be short maturing to reduce climate - related risks and increase production.


Groundnuts, source: GOAL, 2021


Cowpeas, source: GOAL 2021

## The Purdue Improved Crop Storage (PICS) bags

technology is helping to improve food security and increase income of millions of smallholder farmers in Africa and beyond. The PICS bags are a simple and cost-effective way of storing grain and seed without using chemicals to control insect pests. The PICS bag has three layers, two liners fitted inside a woven sack. When each layer is tied and closed separately, it creates a hermetic environment for storing harvested grain. This oxygen-deprived environment proves fatal for postharvest insects. PICS enables farmers to store a variety of legume and cereal crops for more than one year after harvest.

PICS bag, source: Purdue University



## Good demand for new varieties of nutritionally improved and climate adapted Millet, Groundnut & Cowpea seed

Between April and August 2021, ***22.5 tons*** of nutritionally improved and climate adapted seed was sold to farmers through a private sector partner with a 50% sale price. This represents more than a ten-fold increase when compared with the previous year sales. *

## Substantial increase in production when compared to local varieties

| Improved seed | % Increase in production ** |
|---|---|
| Millet | 183.3% |
| Groundnuts | 187.5% |
| Cowpeas | 242.8% |

Production from improved seed is still significantly below ideal production levels, partly due to inter-cropping, a good risk mitigation practice.

## Good evidence that production is being used for household food consumption

87% of respondents said that between 50-100% of their crops would be retained for household food consumption. It should be noted that currently there is no price premium in the market for nutritionally improved commodities. **

## High demand for low-cost storage technology

Over a three-month period, ***27,000*** PICS bags were sold by a private sector partner with a 25% sale price for women only. 15,000 bags were bought by women at the sale price, 12,000 bags were bought by men at the regular price. *

## Early sign of market system change

Following the intervention that demonstrated demand at scale, the private sector partner has reduced the price of PICS bags by 10% for all customers. *

## Low demand for vegetable seeds

Only 39% of 69,300 grams of vegetable seeds, that were made available at a 50% sale price was sold to date (Feb 2022). Seed was made available in the market too late into the planting season.

**Private sector partners records, GOAL weekly validation of sales with retailors*
** Production assessment, GOAL, Jan. 2022



Map of Niger, source: Google

Seed retailor, Zinder, source: GOAL 2921

## Case Study

**Brief background** With support from UNITLIFE, GOAL is implementing an integrated programme to improve nutrition in Zinder Region in Niger, using Social & Behavioural Change methodologies and a Market Systems Development (MSD) approach.

### Partnering with the private sector

The only wholesaler of improved seed in Zinder had an informal network of seed retailors. In previous years he supplied them only once at the beginning of the season, so stock-outs were common, and supply did not meet demand. By working with the (initially) reluctant wholesaler, he increased distribution to seed retailors by restocking them multiple times. ***Sales increased more than ten-fold*** when compared to the previous year in the same location, both the wholesaler and the retailors made more money and farmers accessed quality inputs. The private sector partners provided skill training in product information & government extension workers trained lead farmers on production skills.

### Nutritionally improved & climate adapted seeds

The sale price was used to incentivize farmers to try new improved seed varieties, making it an easier decision for them to invest in seeds that they have not used before. Farmers are wise, they spread risk when trying new inputs by growing both local & improved varieties. Of those sampled (n=137, F 26%), 99% grew local millet with 70% also growing improved millet; 59% grew the local groundnut and 35% also grew the improved groundnut variety; 30% grew the local variety of cowpeas, and 31% also grew the improved cowpea variety. Of those surveyed, 87% said they experienced increased production, 56% said they were more resilient to dry conditions. All of those sampled said that they plan to purchase improved seed for the next planting season. Thirty-one existing retailors were regularly re-supplied by the wholesaler, they sold nutritionally improved and climate adapted and discounted seeds across Zinder. Sale of seeds was lower in areas bordering the Nigerian border where there is more supply. Sale of improved seed was advertised through simple slots on the local radio. This appear to be quite effective with 58% of those who purchased improved seeds hearing about them through the radio and 20% through the seed retailors. Only 7% heard about them through government extension workers underpinning the usual structural constraints within government extension systems.

### Vegetable seeds

Vegetable seeds were sold by retailors at a 50% sale price initially for women farmers only. Seed sales were low as they were made available well into the planting season. Seed sales is the main Key Performance Indicator used to ***adaptively manage*** this intervention. Changes were made during implementation to add another retail point and to open the sale price offer to both men and women farmers.



### Low-cost storage technology

There is an existing retailor of PICS bags in Zinder, he sold 10,667 bags in 2020, 39% of what was sold in 2021 (27,000) through an entrepreneurial retailor who has begun to wholesale using the same retailors selling improved seed (see bundled inputs below). There is also a cheaper poorer quality storage bag available in the market. The sale price of PICS bags (for women only) was set just below the price of the poorer quality storage bag. There is good evidence of demand and supply for PICS bags that is likely to continue after the intervention – early sign of system level change.

### Productive inputs for those harder to reach

Many primary producers are unable to access productive inputs required for their food & economic security. By extending retail systems, critical inputs can be ***bundled*** closer to farmers, where there is a business case for retailors to stock and sell inputs.

## Learning

1. Nutritionally improved seeds can increase the ***nutritional value*** of what people already eat, short maturing crops mitigate ***climate related risks*** and improved seed also increases ***production***, all contribute to increased food & nutrition security.
2. Using relatively small amounts of donor resources and leveraging private sector investment to test different ways of working, can change the ***behaviours*** of market actors, influence ***system*** to work more efficiently, increase access to inputs that assist people to be more ***resilient*** to climate related shocks, increase access to productive inputs for those ***excluded*** and reach ***scale.***
3. By using a MSD approach, it is possible to reach ***scale with less resources*** (Est. USD 30,804) when compared to direct delivery programming (Est. USD 92,819). The estimated difference USD 62,015 is significant & demonstrates how resources can be used more effectively to increase access to improved inputs & technology.
4. Using a sale price for key productive inputs offers a way for farmers to experience new products through the actors which can provide access to productive inputs on a ***sustainable*** basis. But initiatives must be grounded in a sound business model.
5. Incentives can be used successfully to ***target more vulnerable groups*** and to increase access to quality inputs.
6. Farmers are wise, they spread ***risk*** when trying new inputs by growing both local and improved varieties and by inter-cropping.
7. Simple, inexpensive radio advertising seemed to be effective in creating ***demand for new seed varieties***, although the project bought down this cost, rather than the wholesaler/ retailors.
8. In agricultural systems, inputs need to be within the market prior to when producers require them. ***Adaptive management*** allowed the team to make changes during implementation & increase sales.



Millet, source: GOAL 2021

## References/ Citations:

**Estimated costs for direct delivery and an MSD approach**

The example is used for illustrative purposes only and does not include all costs. The two major cost drivers (seed and PICS bags) were compared to illustrate the point.

| Inputs | Direct delivery | MSD |
|---|---|---|
| Seed | USD 46,008 | USD 23,004 |
| PICS bags | USD 46,811 | USD 7,800 |
| **Total** | **USD 92,819** | **USD 30, 804** |


**For more information, please contact:**

**GOAL HQ Dublin**
**info@goal.ie**

**GOAL UK**
**infouk@uk.goal.ie**

**GOAL USA**
**infouk@us.goal.ie**

Iddal Sidi Mohamed, Project Manager isidi@ne.goal.ie

Alemayehu Kuma, Food Security & Livelihoods Advisor akuma@goal.ie

Stanford Senzere, Regional MEL Advisor, ssenzere@goal.ie

Fiona Mitchell, Markets Advisor fmitchell@goal.ie


**goalglobal.org**