

Ventilated storehouse for storing seed potato (Oumar Assarki)

# Ventilated storehouses for highly perishable produce (Mali)

Case aérée de conservation des produits maraichers facilement périssables (French)

### DESCRIPTION

#### The aim of this practice is to improve the preservation and storage of potato tubers in rural areas.

Ventilated storehouses are designed to store cash-crops and seed potatoes in conditions suitable for minimising damage and to hold back stock until market prices rise. The facilities are mudbrick, thatched outbuildings with external dimensions of 7.5 metres long by 5.9 metres wide. The stock quantity is 5,000 to 10,000 kilograms. The preservation period is six months, compared to three months using a traditional system. The loss rate is less than 20%.

Establishment / maintenance activities and inputs: No plant-health treatments are used. Every two weeks, checking for damaged tubers is required (to control rot). Roles of the actors involved: The PCDA (Agricultural Competitiveness and Diversification Programme) funds, monitors and provides support. The promoter owns the site and provides a 25% personal contribution. The research and oversight bodies (ROBs) provide advisory support, monitor activities on the ground and deliver reports.

Natural / human environment: Given its economic benefits, most promoters have adopted this storage system. Others have built storehouses of this kind without any subsidies from the PCDA

#### LOCATION

Location: Zignasso and Bamadougou (Sikasso), Mali, Mali

No. of Technology sites analysed:

Geo-reference of selected sites n.a.

#### Spread of the Technology:

In a permanently protected area?:

Date of implementation: less than 10 years ago (recently)

#### Type of introduction

- through land users' innovation as part of a traditional system (> 50 years) during experiments/ research
- through projects/ external interventions

# CLASSIFICATION OF THE TECHNOLOGY

#### Main purpose

- improve production
- reduce, prevent, restore land degradation
- conserve ecosystem
- protect a watershed/ downstream areas in combination with
- other Technologies preserve/ improve biodiversity
- reduce risk of disasters
- adapt to climate change/ extremes and its impacts mitigate climate change and its impacts
- create beneficial economic impact
- create beneficial social impact

# Land use

Land use mixed within the same land unit: Yes - Agro-silvopastoralism

#### Cropland 10E



• Annual cropping: root/tuber crops - potatoes, rice Number of growing seasons per year: 1

# Water supply



full irrigation

#### Purpose related to land degradation

- prevent land degradation
- reduce land degradation
- restore/ rehabilitate severely degraded land adapt to land degradation
- not applicable

#### SLM group

post-harvest measures

# SLM measures

Degradation addressed



# **TECHNICAL DRAWING**

#### Technical specifications

# ESTABLISHMENT AND MAINTENANCE: ACTIVITIES, INPUTS AND COSTS

#### Calculation of inputs and costs

- Costs are calculated:
- Currency used for cost calculation: CFA Franc •
- Exchange rate (to USD): 1 USD = 517.0 CFA Franc •
- . Average wage cost of hired labour per day: n.a

#### Most important factors affecting the costs

Investment costs: 584,000 CFA francs (1,136 Dollar): crates – 400,000 CFA francs, storehouses – 184,000 CFA francs. Preservation costs: each kilogram of stored potato will incur an extra cost of 53 CFA francs (0.10 Dollar). Break-even point in terms of revenue: once turnover moves beyond 105,510 CFA francs, the conservation activities begin to become profitable. Break-even point in terms of quantity: a minimum stock of 313 kilograms must be stored for the activity to be profitable.

#### Establishment activities

1. Construction of ventilated storehouse. The facilities are mudbrick, thatched outbuildings with external dimensions of 7.5 metres long by 5.9 metres wide (Timing/ frequency: None)

#### Maintenance activities

1. Every two weeks, checking for damaged tubers is required (to control rot). (Timing/ frequency: None)

Habitat diversity high

#### NATURAL ENVIRONMENT



Species diversity high

<ul> <li>Iarket orientation         <ul> <li>subsistence (self-supply)</li> <li>mixed (subsistence/ commercial)</li> <li>commercial/ market</li> </ul> </li> </ul>	<ul> <li>Off-farm income</li> <li>less than 10% of all income</li> <li>✓ 10-50% of all income</li> <li>&gt; 50% of all income</li> </ul>	Relative level of wealth very poor poor average rich very rich	Level of mechanization manual work animal traction mechanized/ motorized	
edentary or nomadic Sedentary Semi-nomadic Nomadic	Individuals or groups individual/ household groups/ community cooperative employee (company, government)	Gender women men	Age children youth middle-aged elderly	
Area used per household < 0.5 ha 0.5-1 ha 1-2 ha 2 2-5 ha 5-15 ha 15-50 ha 50-100 ha 100-500 ha 500-1,000 ha 1,000-10,000 ha > 10,000 ha	Scale small-scale medium-scale large-scale	Land ownership state company communal/village group individual, not titled individual, titled	Land use rights open access (unorganized) communal (organized) leased individual Water use rights open access (unorganized) communal (organized) leased individual	
Access to services and infrastruct ealth ducation echnical assistance mployment (e.g. off-farm) narkets nergy oads and transport rinking water and sanitation nancial services	poor       Image: Comparison of the comparis			
IMPACTS				
Socio-economic impacts arm income Preservation/storage for cash-crops and seed potatoes	decreased inc	reased		
Socio-cultural impacts ood security/ self-sufficiency health situation SLM/ land degradation knowledge situation of socially and economically disadvantaged groups	reduced im worsened im reduced im worsened im	proved proved proved		
gender, age, status, ehtnicity etc.) nproved livelihoods and human rell-being	decreased <b>and a set of the set o</b>	ventilated storehous and seed potatoes in damage and to hold Preservation period: using a traditional st	ses are designed to store cash-crops n conditions suitable for minimising back stock until market prices rise. : six months, compared to three mon ystem Loss rate: less than 20%	

# Ecological impacts

# Off-site impacts

COST-BENEFIT ANAL	'SIS
Benefits compared with est	blishment costs
Short-term returns	very negative
Long-term returns	very negative very positive

Short-term returns	
Long-term returns	

Long-term returns	very negative very positive
CLIMATE CHANGE	
Gradual climate change annual temperature increase	not well at all 📕 🖌 Very well
Climate-related extremes (disasters) local rainstorm local windstorm drought general (river) flood	not well at all       ✓       very well         very well       ✓       very well         very well       ✓       very well         very well       ✓       very well
Other climate-related consequences reduced growing period	not well at all 🗾 🗸 very well
ADOPTION AND ADAPTATIC	N

Percentage of land users in the area who have adopted the Technology

single cases/ experimental 1-10% 11-50% > 50%

Of all those who have adopted the Technology, how many have done so without receiving material incentives?

- 0-10% 11-50% 51-90%
- 91-100%

# Has the Technology been modified recently to adapt to changing

- conditions?
- Yes No

# To which changing conditions?

- climatic change/ extremes
- changing markets
- labour availability (e.g. due to migration)

# CONCLUSIONS AND LESSONS LEARNT

## Strengths: land user's view

### Strengths: compiler's or other key resource person's view

- More food available through improved storage: preservation period: six months, compared to three months using a traditional system. Loss rate: less than 20%.
- Capacity to cover outgoings without selling the potato stocks in storage
- high economic benefits

Weaknesses/ disadvantages/ risks: land user's viewhow to overcome

#### Weaknesses/ disadvantages/ risks: compiler's or other key resource person's viewhow to overcome

There are difficulties if there is a lack of available straw for ۰ thatching, if growing techniques are not being mastered, and if there is a lack of thermometers or hygrometers

## REFERENCES

**Compiler** Dieter Nill Editors

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Last update: May 27, 2019

Date of documentation: Sept. 24, 2014

**Resource persons** Dieter Nill - SLM specialist Oumar Assarki - SLM specialist

### Full description in the WOCAT database https://qcat.wocat.net/en/wocat/technologies/view/technologies\_1640/

# Linked SLM data

n.a.

# Documentation was faciliated by

Institution

- Agricultural Competitiveness and Diversification Programme (PCDA) Mali
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (GIZ) Germany

Project

• Manual of Good Practices in Small Scale Irrigation in the Sahel (GIZ )

Key references

• Agricultural Competitiveness and Diversification Programme (PCDA)/Rural Economy Institute (IER): Référentiel technico-économique conservation de la pomme de terre en cases aérées [Technical and economic reference document on preserving potatoes in ventilated storehouses]:

### Links to relevant information which is available online

• None: None

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