Photo Showing Wire Mesh Maize Storage Crib in Kamwenge District, South Western Uganda (Aine Amon)

Wire Mesh Maize Storage Crib ( )

Akaju k'obutimba akubarabikamu ebikyoli

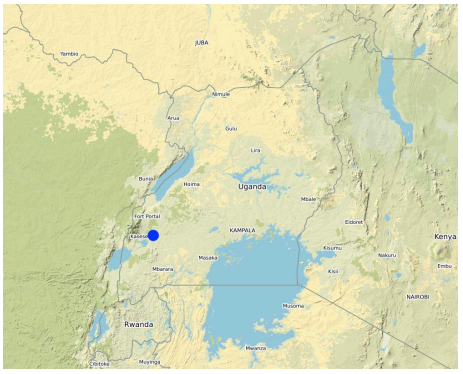
Wire mesh maize storage crib technology is a medium to large scale technology promoted by a farmer in Kamwenge District in South Western Uganda to prevent maize grains from being affected by rainfall. The technology allows for good air circulation which is essential for drying out the maize grains. In this way the grain quality is improved.

The technology is suitable for farmers growing maize on medium to large scale for commercial purposes. It was adopted from Europe by a farmer in Kamwenge District to help in handling large quantities of maize harvests from a 50-acre farm, which is the largest piece of land under maize farming in the area. Most operations on the farm e.g. land preparation, planting, weeding, spraying and harvesting are semi mechanized. Maize harvest from the farm averages about 2,000 tons per season. This requires a reliable post- harvest handling system that can store the large volumes of maize grain safely with good quality for the market.

The storage cribs are constructed with a wire mesh which is bent to form a rectangular shape to allow more space for storage. The wire mesh structure is then placed on a wooden platform raised a 1 meter above the ground. The whole system is then protected from elements of weather by an iron sheet roof raised 3 meters away from the platform. In front of the structure is a floor space where the harvested maize is first spread on a tarpaulin for sun drying to reduce the moisture content that may be a source of mould leading to grain spoilage and reduces grain quality.
The crib is suitable for storage of maize cobs in both the humid and dry seasons in the Kamwenge area. The structure is well positioned with the longer side in a direction perpendicular to the prevailing wind direction thus facilitating natural ventilation. This allows the drying process to continue even during storage and minimises the possibility of post harvest losses through spoilage.

The storage life greatly depends on the prevailing ambient temperature and relative humidity, and other factors like the inherent moisture pests and diseases. The rectangular shape allows for more space for storage and the material used is durable to beyond 7 years if repairs are done in time. Yet, despite these advantages, the wide open wire mesh allows in birds which feed on the maize which brings about losses.

Establishment cost of the maize storage crib is mainly determined by the construction materials and size. The farmer reported using US$ 4,191.7 in total to establish the structural size of 30 m length, 12 m height and 3 m width . Maintenance activities included repairing the damaged patches on the crib plus also fumigating the units to prevent insects from damaging the poles and eating harvested maize which costs the farmer about US$ 54.8 per season.The costs involved in establishing the technology are slightly higher in the short run while in the long run the net benefits surpass the initial costs. This system is best suited for farmers practising commercial maize farming. However, small scale farmers may be able to construct small size storage cribs using cheaper materials like reeds, bamboo and wood.



: Kamwenge District, South Western Uganda, South Western Region,

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- 30.4199, 0.1964

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: 2007

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Photo showing wire mesh crib with maize cobs in Kamwenge District, South Western Uganda (Aine Amon)

- ☑ Reduction of post harvest lossses

- SLM

Crib structure dimension
-Length is 30 meters, height 4 meters and width is 3 meters
-Spacing between crib units is 2 meters
-Wire mesh size is measure depending on the size of structure in this case 30 by 4 meters
-Timber used is eucalyptus variety, pole size is 16 centimeters diameter, pole height 5.5 meters
-Gentle sloping
-Construction materials used are wire mesh, nails, timber, poles and iron sheets

- Construction materials (**Crip: 30m*4m*3m**)
-) 1 USD = 3600.0 (
- 50,000 Uganda shillings

1. Construction labor (/ : Once)
2. Wire Mesh (/ : Once)
3. Iron sheets (/ : Once)
4. Nails (/ : Once)
5. Timber (/ : once)
6. Poles (/ : Once)

			( )	( )	%
Construction labor	Days	30,0	13,8	414,0	100,0
Wire Mesh	Meters	150,0	7,9	1185,0	100,0
Poles	Pieces	268,0	0,6	160,8	100,0
Nails	Kilograms	105,0	1,2	126,0	100,0
Timber	Pieces	420,0	1,0	420,0	100,0
Iron sheets	Pieces (2.5mX0.5m)	120,0	6,2	744,0	100,0
				3'049.8	

1. Repairing damaged patches of the crib (/ : Once a year)
2. Fumigating the crib units to prevent pests (/ : During harvesting periods)

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166,0

- [ ] < 250
- [ ] 251-500
- [ ] 501-750
- [ ] 751-1,000
- [ ] 1,001-1,500
- [ ] 1,501-2,000
- [x] 2,001-3,000
- [ ] 3,001-4,000
- [ ] > 4,000

- [ ] (0-2%)
- [x] (3-5%)
- [ ] (6-10%)
- [ ] (11-15%)
- [ ] (16-30%)
- [ ] (31-60%)
- [ ] (>60%)

- [ ] 0-100
- [ ] 101-500
- [x] 501-1,000
- [ ] 1,001-1,500
- [ ] 1,501-2,000
- [ ] 2,001-2,500
- [ ] 2,501-3,000
- [ ] 3,001-4,000
- [ ] > 4,000

( )

- [x] (0-20)
- [ ] (21-50)
- [ ] (51-80)
- [ ] (81-120)
- [ ] (> 120)

( )

- [ ] / ( )
- [x] (,)
- [ ] / ( )

(> 20)

- [x] / ( )
- [ ] (,)
- [ ] / ( )

- [x] (>3%)
- [ ] (1-3%)
- [ ] (<1%)

( )

- [ ] < 5
- [x] 5-50
- [ ] > 50

- [x]
- [ ] /

( )

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- [x]
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SLM

10%

10-50%

50%

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< 0.5

0.5-1

1-2

2-5

5-15

15-50

50-100

100-500

500-1,000

1,000-10,000

> 10,000

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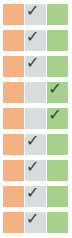

Increased crop production since a farmer has a secure safe storage system hence he can produce more as it is stored

Being it the grains are kept properly and in a favorable environment for the grains

The technology has promoted income increase simply because with the storage system a farmer can get to sell his produce

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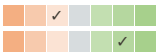
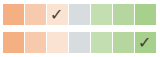
This has helped in solving a problem of food insecurity since the maize grains can be stored for a relatively long period. Hence, at any time grains can be processed into maize flour.





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- [x]
- [ ] 1-10%
- [ ] 10-50%
- [ ] 50%

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- [ ] 0-10%
- [ ] 10-50%
- [ ] 50-90%
- [ ] 90-100%

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- [ ] /
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- Maintains the maize grains in good conditions
- Allows drying process to continue even during storage time
- The farmer generates more income since he sells when the market prices are favorable

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- Quite a good innovation practice especially for those farmers growing maize on large scale for commercial purposes
- Reliable post harvesting technique
- Reliable storage system

/ / :

- Crib establishment is relatively costly Farmers opt for cheap system like the traditional granaries
- Best for farmers growing maize on a very large scale for commercial purposes To be adopted by farmers growing maize on commercial scale
- Fumigating the units during harvest period is relatively expensive

/ / :

- Only favors farmers who can handle the establishment cost Farmer organisations and government should come in to help middle farmers by providing them with establishment materials at a relatively lower price, this will enable them adopt the system.

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: 1 2018 : 23 2020

Garuga Musinguzi -

https://qcat.wocat.net/km/wocat/technologies/view/technologies_3375/
: https://player.vimeo.com/video/261306487

SLM

- National Agricultural Research Organisation (NARO) -
- Scaling-up SLM practices by smallholder farmers (IFAD)

- Economic importance of different maize storage structures in Kenya: https://www.slideshare.net/pchenevixtrench/economic-importance-of-different-maize-storage-structures-in-kenya
- Does Improved Storage Technology modern input use and food security? Evidence of randomized trial in Uganda: https://www.sciencedirect.com/science/article/pii/S030438781830926X