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## Introduction

- Year-round availability of a variety of vegetable remains a challenge globally
- Cost-effective and culturally acceptable vegetable preservation methods contribute to food security
- Preservation as easy option to enhance vegetable intake and thus dietary diversity.

## Objective

- To investigate how best to promote vegetable drying and to introduce dried vegetables into diets

## Results

- Most of the TIPS households tried vegetable drying in the usual way under the open sun, which caused some problems:

*“The wind blew away some of the vegetables in the process of drying”*  
(Woman, Obekai A)

- Those who used the dryer did this despite unfavourable weather conditions, and were positive surprised

Tab.1: Implementation rates (Kenya) -> vegetable drying

	Preserve vegetables by following the taught steps	Store dried foods in an airtight storage facility	Cook the dried vegetables by soaking beforehand	Construct solar dryer
✓	45	34	28	9
(✓)	0	0	0	0
x	3	5	8	35
<b>Total</b>	<b>48</b>	<b>39</b>	<b>36</b>	<b>47</b>
<b>Implementation rate</b>	<b>94%</b>	<b>87%</b>	<b>78%</b>	<b>19%</b>

**Key:**  
 ✓ = recommendation agreed upon was successfully implemented  
 (✓) = recommendation agreed upon was implemented with a modification  
 x = recommendation agreed upon was not (successfully) implemented

- Solar dryer provided an opportunity to preserve vegetables even in times of rains
- Challenges occurred in offering solutions on how best to store dried vegetables at the homesteads
- Not enough appropriate storage containers (Kenya and Uganda)
- Evaluation in Kenya (survey): while sun-drying of vegetables was associated with being a TIPS household, it was not commonly practiced

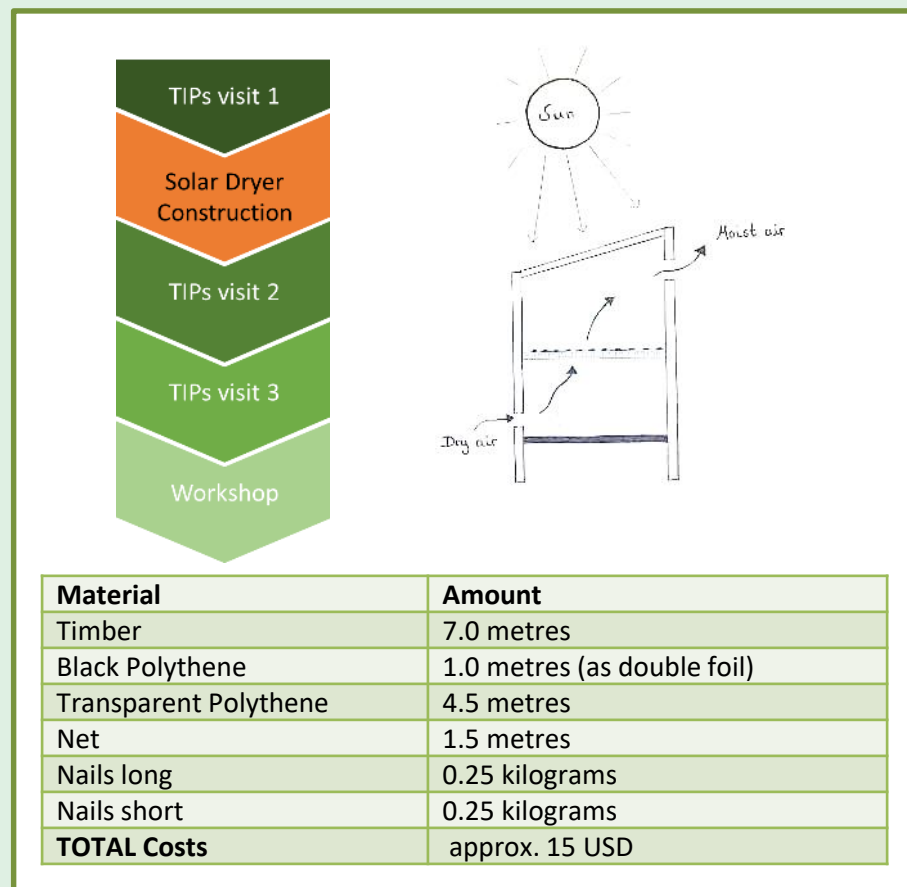


Fig. 1: Data collection process, solar dryer material and construction [1]



Fig. 2: Blanching leafy vegetables and fruity vegetables in solar dryer [2]

## Cooking Dried Vegetables [3]

- ✓ Soak the vegetables in a small amount of water (enough only to cover)
  - about 30 minutes for green leafy vegetables
  - about 60-120 minutes for fruity vegetables
- ✓ Cook the vegetables in the soaking water because it contains the water-soluble nutrients. If needed add small amounts of water during cooking. Cook until tender.
- ✓ Continue your meal preparation as you would with fresh vegetables.



Fig. 3: Cooking and tasting trials – fresh versus dried vegetables

## Methods

- Women from small-holder farm households in Kapchorwa, Uganda and Teso South, Kenya (n=100)
- Took part in a Trial of Improved Practices (TIPs) followed by group discussions in workshops (qualitative data collection)
- Solar dryer construction was done with participating TIPs-households
- Travel allowance was paid for joining the workshop but not for the construction
- Cross-sectional survey in January 2021 in Teso-South, Kenya, only

Acceptance differed depending on vegetable type, drying process and recipe. Tasting results, e.g. Kenya:

- **Dried versus fresh pumpkin: 1:0**
- **Dried versus fresh cowpea leaves: 1:1**

*“[i] cooked some of the vegetables and [ ] loved the taste”* (Woman, Docketkamoru)

*“The dried vegetables were a bit tough; I had to cook for a longer time”* (Woman, Olupe)



Fig. 4: Dried vegetables soaked and prepared for cooking [3]

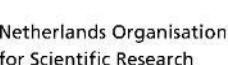
## Conclusions

- Dried vegetables are tasty if produced and prepared in an appropriate manner.
- Needs adaptation of existing recipes at household level and promotion in participatory cooking trials to make them culturally acceptable for everyone.
- Innovative packaging is needed to store home-scale dried vegetables in an appropriate and sustainable manner.

### Consortium:



### The project was funded by:



[1] Fortunatus R, Marealle R, Nunguwo N, et al. (2017) Solar Dryers: Principles and Basics. World Vegetable Center. Shanhu, Taiwan, 17(827)

[2] Kamuru SM Household Food Preservation for Food Security in a Changing Climate. Climate Adaption Project (CAPro) of Egerton and Laikipia Universities, Kenya. Available at: [http://farmup.egerton.ac.ke/images/pdf/house\\_holds.pdf](http://farmup.egerton.ac.ke/images/pdf/house_holds.pdf)

[3] Marealle R, Fortunatus R, Nordley T, et al. (2017) Dried Vegetable Recipes Taiwan: World Vegetable Center. Available at: <https://avrdc.org/wpfb-file/dried-vegetable-recipes-pdf/>