BAOQUALITY PROJECT

ZANKHALANGO ASSOCIATION

Instruction Manual for Baobab Cultivation

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Based on Experiences in Mangochi, Malawi

With support from

Federal Ministry of Food and Agriculture

by decision of the German Bundestag

Instruction Manual for Baobab Cultivation - Based on Experiences in Mangochi, Malawi

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Photos by Nele Hansohm, Lennart Jansen and Jens Gebauer

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Opportunities from baobab cultivation

Sustainability

- Utilization of local resources
- Utilization of excess seeds

Nutrition

- Leafy vegetable
- Water-rich tubers

Cultivation

- Dual-purpose cultivation (leaves and tubers)
- Easily manageable

Products

- Marketable
- Home consumption

Seed pretreatment

Why?

Baobab seeds have a very **low germination rate**!

Solution?

1. Use **fresh** seedstock (not older than 1 year)
2. Treat the seeds with **nicking**
3. Use **double** to **triple amount** of seeds for each plant you plan to harvest

Seed pretreatment

Steps:

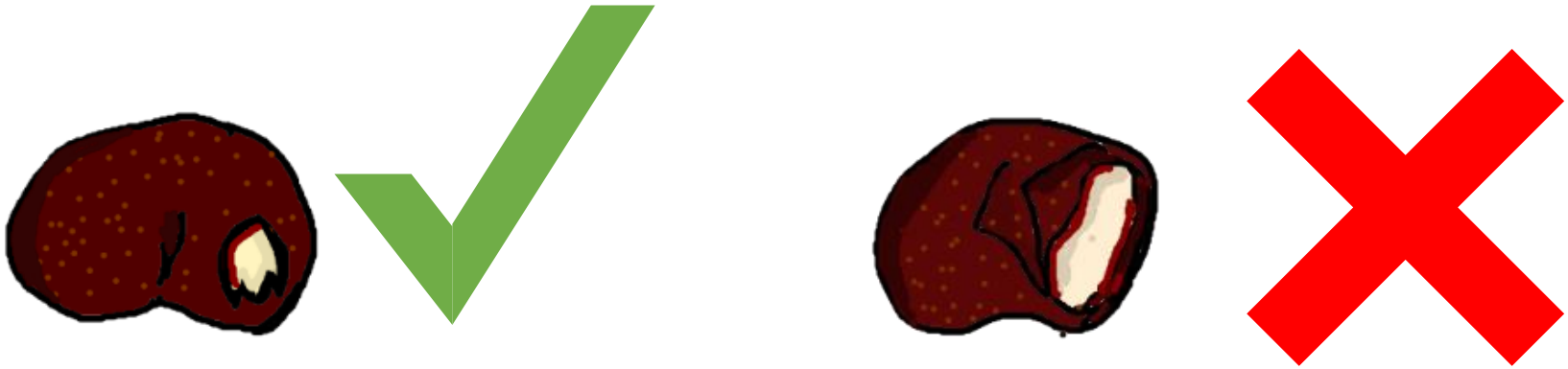
1. Put seeds in water to identify and remove nonviable ones

2. File down seed coat using a rough surface (e.g. sand paper, stone) or nick seed with knife, secateurs

Seed pretreatment II

Steps:

3. Stop when you see the inner white part – a small hole is enough!



Germination rate: **20-40%**

Alternative methods as described elsewhere (see page 19) are currently being tested.

Field preparation

1. Clearing & Tillage

<u>Aim</u>

- Removal of plants
- Loosen soil

<u>Material</u>

- Hoe

Field preparation

2. Fencing

<u>Aim</u>

- Protection from livestock

<u>Materials</u>

- Wooden poles, stems, branches
- Rubber band (‘‘rinja‘‘)
- Machete

Field preparation

3. Preparing the seedbed

- Form ridges and furrows

<u>Aim</u>

- Easier planting and harvest
- More effective irrigation

<u>Material</u>

- Hoe

Field preparation

4. Mulching (after sowing!)

- On ridges and in furrows

<u>Aim</u>

- Suppressing weeds
- Reducing evaporation

<u>Materials</u>

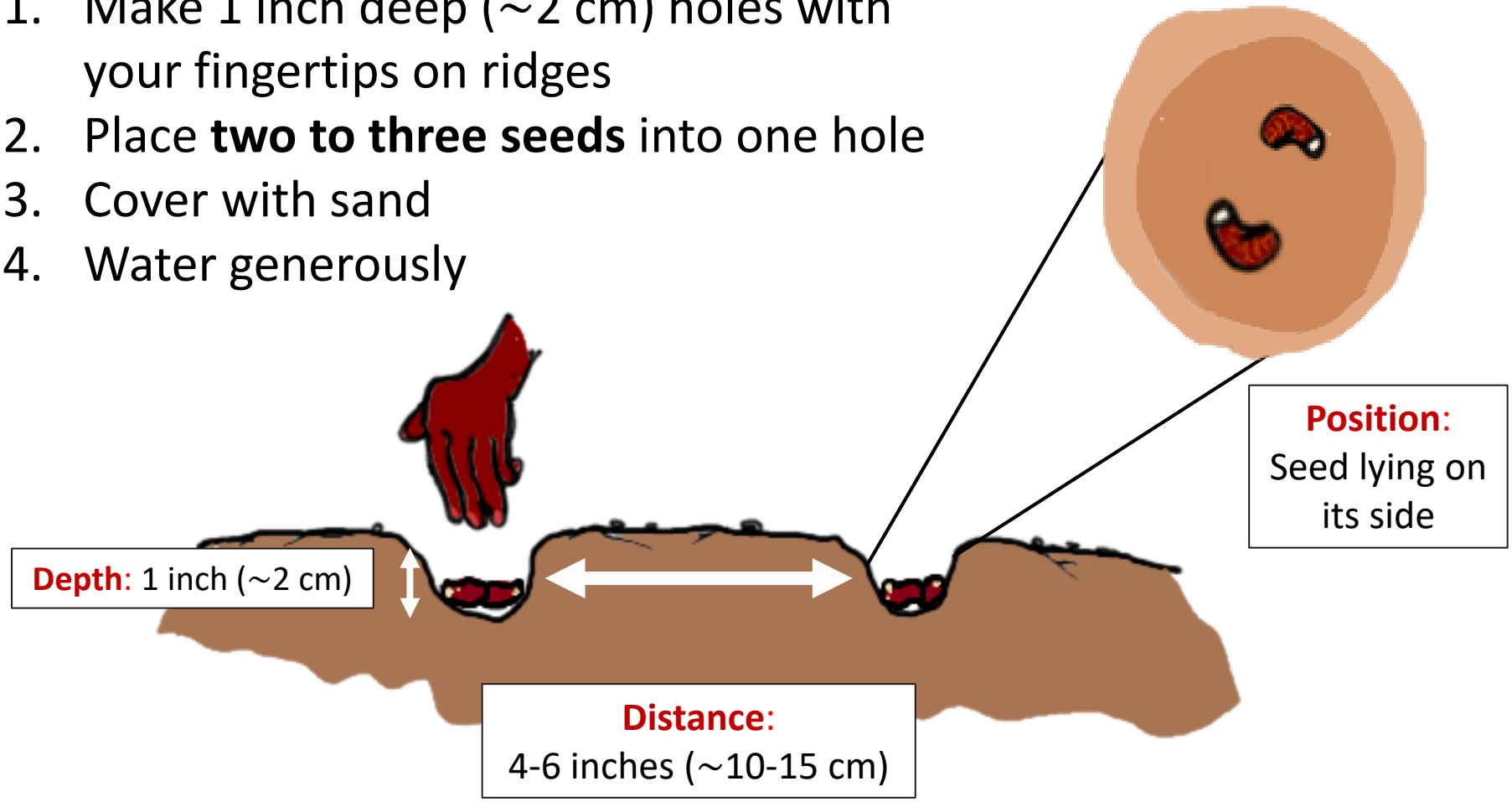
- Machete
- Wildgrass (‘‘udzu‘‘)

Sowing

After germination:
Leave one best-looking seedling per hole, remove any others that have germinated.

Steps:

1. Make 1 inch deep (~2 cm) holes with your fingertips on ridges
2. Place **two to three seeds** into one hole
3. Cover with sand
4. Water generously



Irrigation

- Regularly water when soil is dry
- Avoid waterlogging
- Use fresh water
- Proper watering times reduce evaporation and risk of sunburn:

  Mornings: before **9 am**

  Evenings: after **4 pm**

Example irrigation plan

KATHILIRIDWE KA MBEU ZA MLAMBE			
TSIKU/DATE	NTCHITO/ ACTIVITY	NTHAWI/TIME	
01-Jun	kuthirira (To be watered)	Madzulo	4:00pm
02-Jun	kuthirira	Mmawa	8:00pm
03-Jun	Osathirira		
04-Jun	kuthirira	Mmawa	7:00am
05-Jun	kuthirira	Madzulo	4:00pm
06-Jun	Osathirira		
07-Jun	kuthirira	Mmawa	7:00am
08-Jun	kuthirira	Madzulo	4:00pm
09-Jun	Osathirira		

Pests

Important:
Always protect the seedlings from livestock with a fence!

Aphids:
Green or black, on underside of leaves or inside curled new leaves, ants are indicators, curled leaves are symptoms

Control method
- Manual removal
- Wash off with jet of water
- Apply neem-water mixture (see pages 14-15)

Mealybugs:
White spots on leaves, often together with aphids

Control method
- Manual removal
- Wash off with jet of water
- Apply neem-water mixture (see pages 14-15)

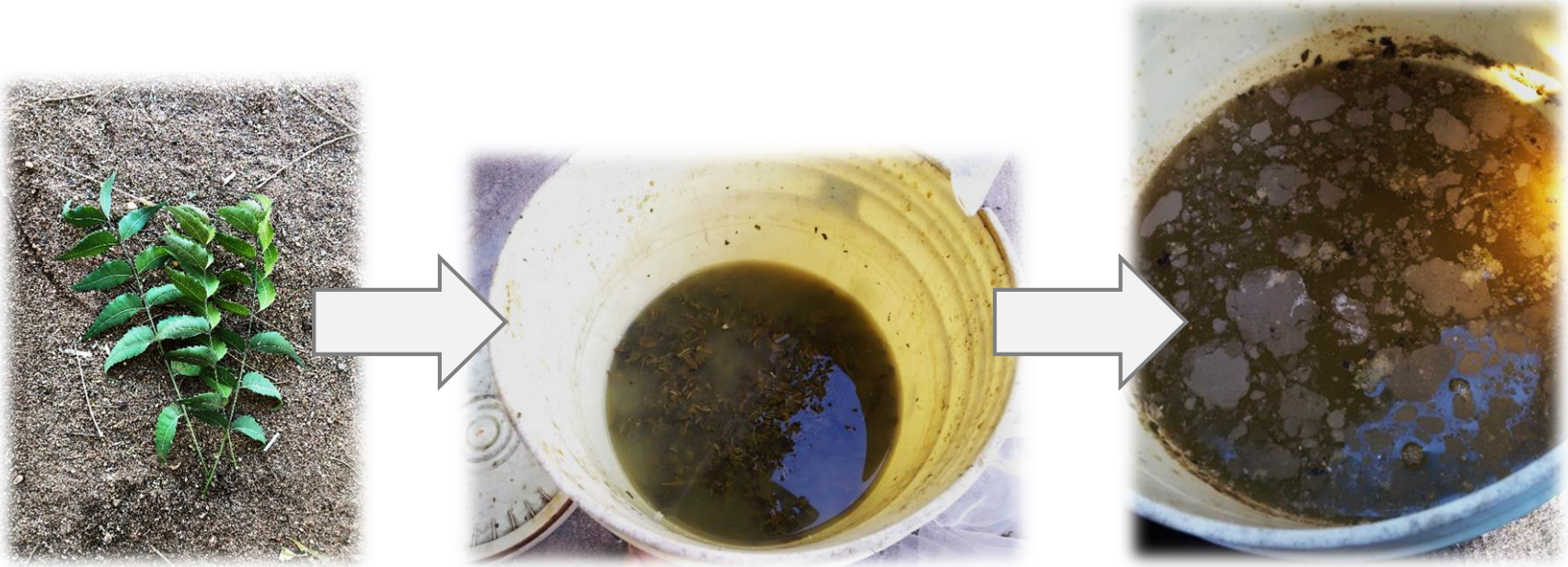
Red cotton stainer:
Red bugs with white stripes and black spots on the back

Control method
- Manual removal when abundant

Neem-water Application

Steps:

1. Grind neem leaves and mix them with water (**1:1** volume ratio)
2. Let the mixture stand for two days in a bucket and cover with a lid



Neem-water Application

Steps:

3. Sieve the mixture to get rid of leaf particles
4. Spray the solution on both sides of the leaves

Harvest

Harvest date: **4 to 5 months** after sowing

HOW?

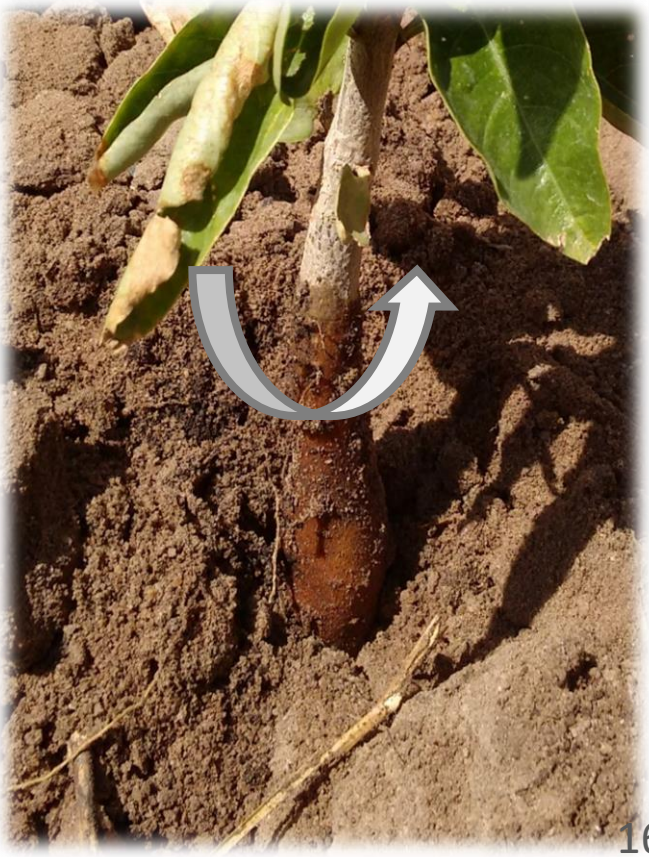
Important: Be careful when pulling out the seedling!

Step 1

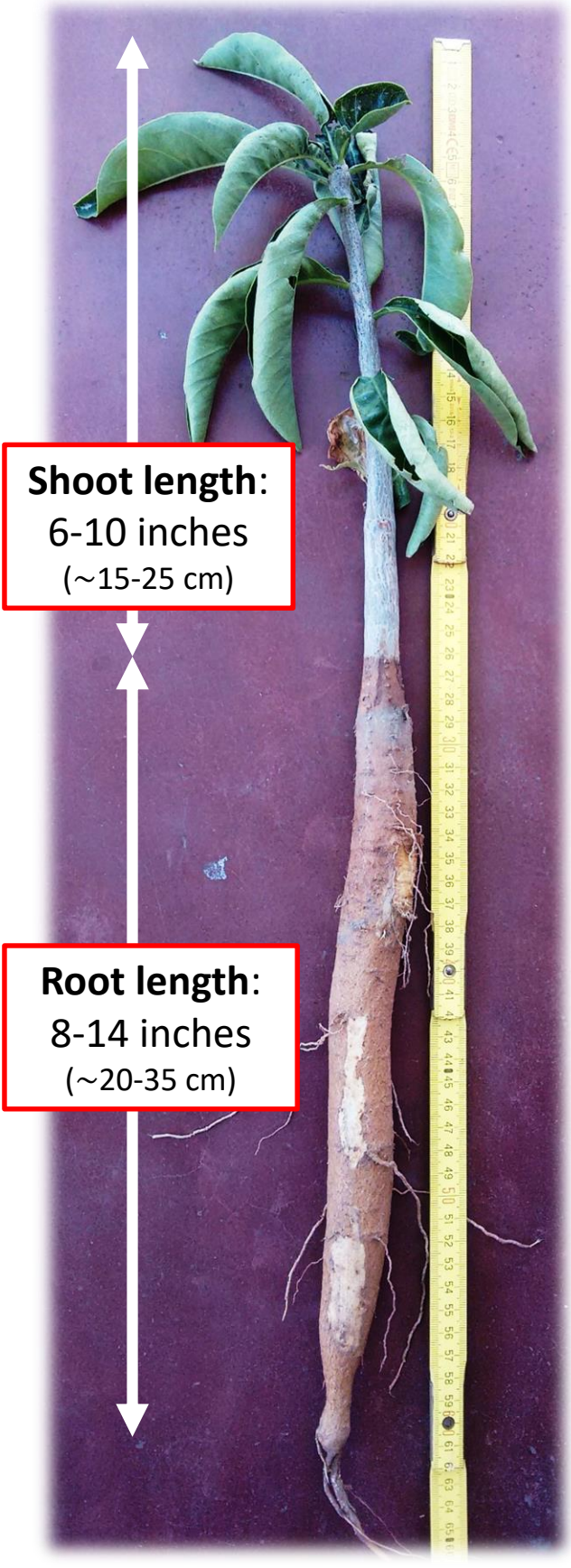
- Dig around seedling and remove the surrounding soil.
- Be careful to not damage the tuber!

Step 2

- Grab seedling at stem-root junction and move around gently until it comes out easily.



Harvested Products



Baobab **leaves**

- Can be used fresh, dried or cooked
- Are high in minerals and protein
- Can be consumed as salad, spinach or relish

Baobab **tubers**

- Can be eaten fresh as snack or in salad
- High water content (ca. 90%)
- High variability in size and shape

Storage

Fresh leaves

- Do not separate shoot and root part, until direct consumption/sale
- Avoid direct sunlight

Dried leaves

- Separate fresh leaves from shoot
- Place them in a dry place
- Protect from livestock and other animals

Tubers

- Leave whole until consumption/sale
- Store in cool, dark place

Further information

Seed pretreatment – Soaking & Peeling Method:

https://www.youtube.com/watch?v=_BW5O9GsuhE

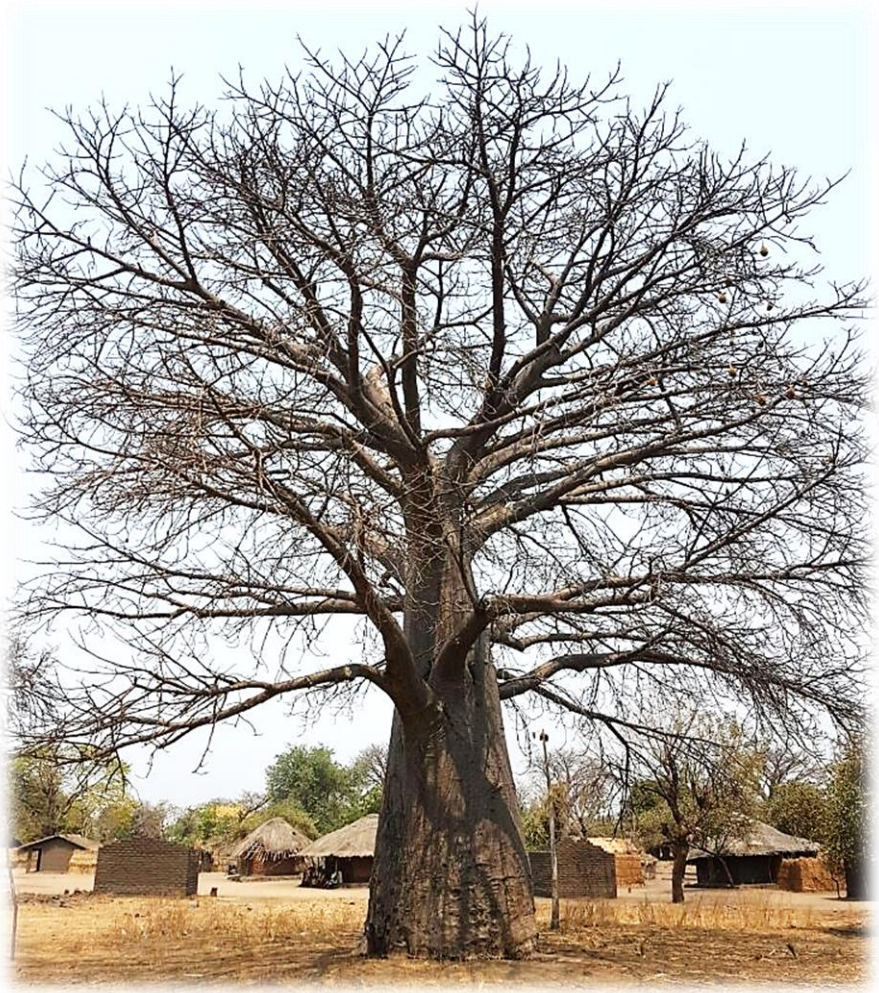
https://www.youtube.com/watch?v=PUkyq8CL2Ko&t=3s

Baobab growth – Timelapse:

https://www.youtube.com/watch?v=uCOdlT_p3Z0

BAOQUALITY project brief

- **Duration**: 2019-2022 (3 years)
- **Budget**: approx. 1.4m €
- **Study area**: Malawi, Kenya, Sudan
- Conducted in collaboration with **research institutions**, **NGOs** and **industry** in Germany, Malawi, Kenya and Sudan



Baobab (*Adansonia digitata* L.) in Mangochi, Malawi

Project Consortium