

GOOD AGRONOMIC PRACTICES FOR BANANA PRODUCTION

Better Bananas for Wealth and Health



How to use the banana story chart set

This banana story chart set is designed for use by extension staff, Lead farmers or community based facilitators to impart knowledge to farmers on good banana farming practices. The chart set is comprised of illustrations on each front page and respective key messages on each back page.

In preparations for farmer training, it is advisable for the facilitator to familiarise with the content and plan for the necessary training and demonstration materials. The training should be planned to be held within a nearby banana plantation.

For each illustration page, farmers should visualise and explain what they perceive/ understand from it and their known practice. The facilitator should then provide room for discussion whereby the correct answers are strengthened and wrong answers corrected following key messages on back pages.

Each training session should cover at least one to two topics to allow time for practical sessions. This should involve demonstrations to farmers in garden how to carry out each activity.

The facilitator should avoid reading the key messages without discussions and practical sessions. At the end of each session, farmers should discuss in pairs what they have learnt and what action steps they are taking.

Better Bananas for Wealth and Health



Meet Annet and Fred

Annet and Fred have their fields adjacent to each other.

Annet and Fred get different banana harvests because they carry out different practices.

Fred's practices include phased mulching, phased manuring, timely de-suckering, timely male bud removal, de-trashing, partial trenching, weevil trapping. While Annet practices self-mulch, late corm removal, irregular de-budding, irregular de-suckering and forking.

Annet looks at her garden and thinks, "What should I do to get enough food for my family and income from banana sales?"

Fred on the other hand thinks, "I have food for my family and some bananas to sell but how can I make it better to start selling more?"

Meet Annet and Fred



Selling bananas in the market

Fred and Annet meet in the market with another farmer called Peter who has a truck full of bananas and surrounded with many buyers.

Annet is selling three small bunches on a papyrus mat while Fred has a bicycle full of 7 bunches for sale.

Selling bananas in the market



Selling bananas in the market

Fred and Annet talk about their sales. Annet asks, “how come I am going back home with very little money and I am still stuck with a bunch, yet Peter had a truck and has sold all he brought?” Annet is wondering how Peter used to bring bananas on a motorcycle but is now bringing a whole truck!

Fred suggests that they talk to Peter to find out the magic he is using.

Selling bananas in the market



After selling (How does Peter do it?)

Upon asking him, Peter replies “it is not magic but just good management,” and invites them to his plantation to learn about good banana management. Annet requests Peter to allow her farmer group to join her so they too can learn. Peter agrees.

How does Peter do it?



Meeting at Peter's farm

Peter welcomes the group of farmers to his home and takes them to the banana plantation.

Fred, Annet and the other farmers are amazed after looking at the plantation. One of the farmers asks Peter how big his plantation is.

“Do you get all the bananas you bring to the market from this plantation?” asked another farmer.

Peter replies that his plantation is 2 acres and he harvests 80 bunches per acre in a month.

Meeting at Peter's farm



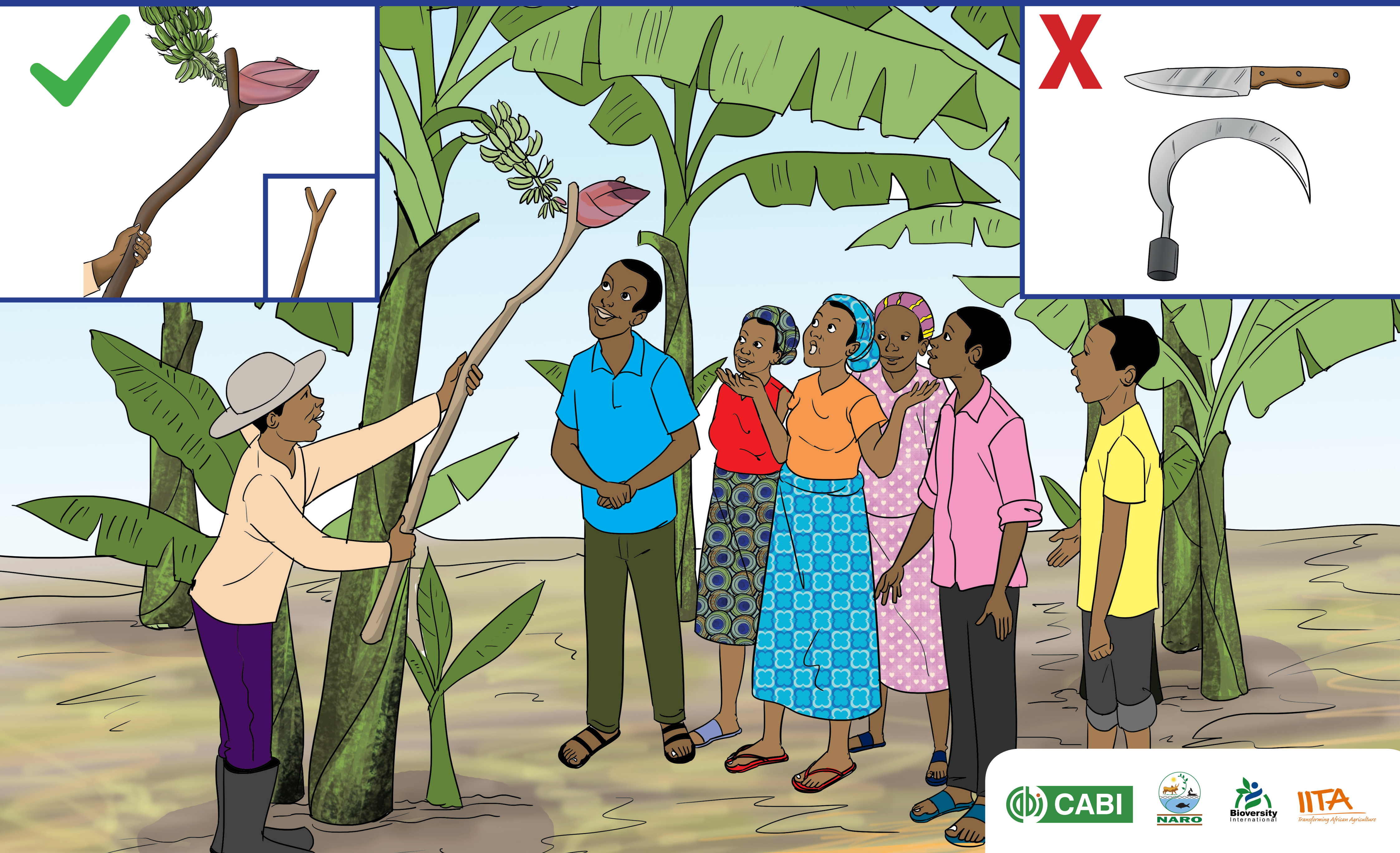
De-budding

Annet asks Peter, “I can see only one male bud in this plantation, when and why do you remove them?”

Peter responds, “I remove them as they appear to control spread of banana bacterial wilt.”

Peter advises her to remove the male bud immediately after formation of the last cluster **Or** when the fingers start curving upwards using a **forked stick** not a cutting/sharp object.

De-budding



Banana weevil

Another random farmer from the group asks how Peter controls pests.

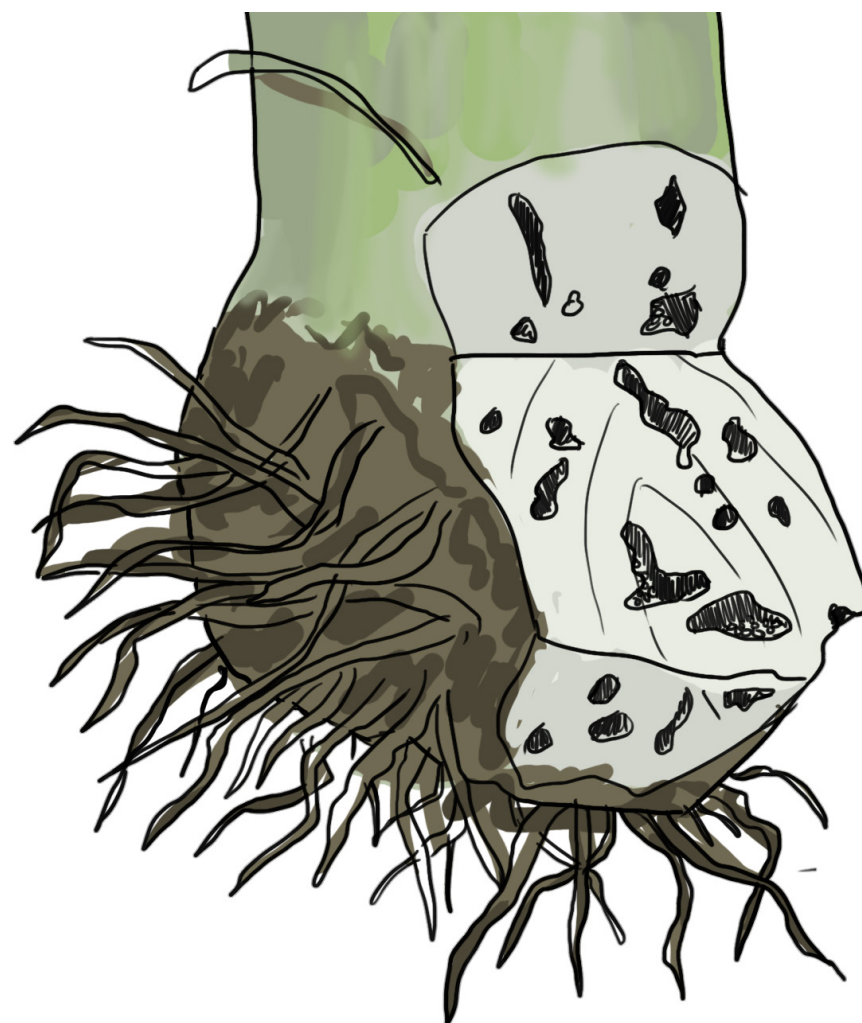
Peter responds that weevils were the most rampant pests and that they can cause 8-60% loss. The larva is the most destructive. It feeds on corm tissues and creates tunnels. This interferes with water and nutrient uptake resulting in snapping of the plant. The weevils like moist dark places especially under the intact pseudo-stem.



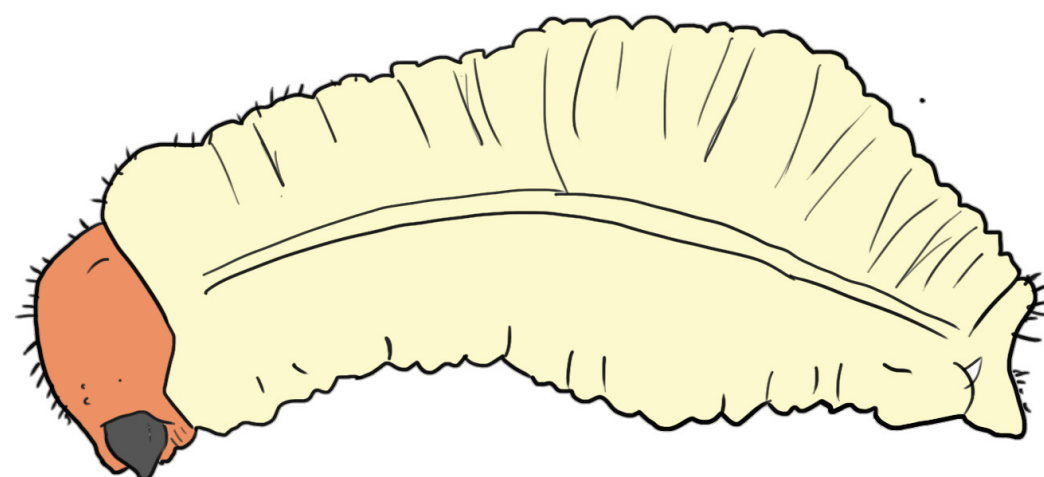
Banana Weevil



Adult



Eggs

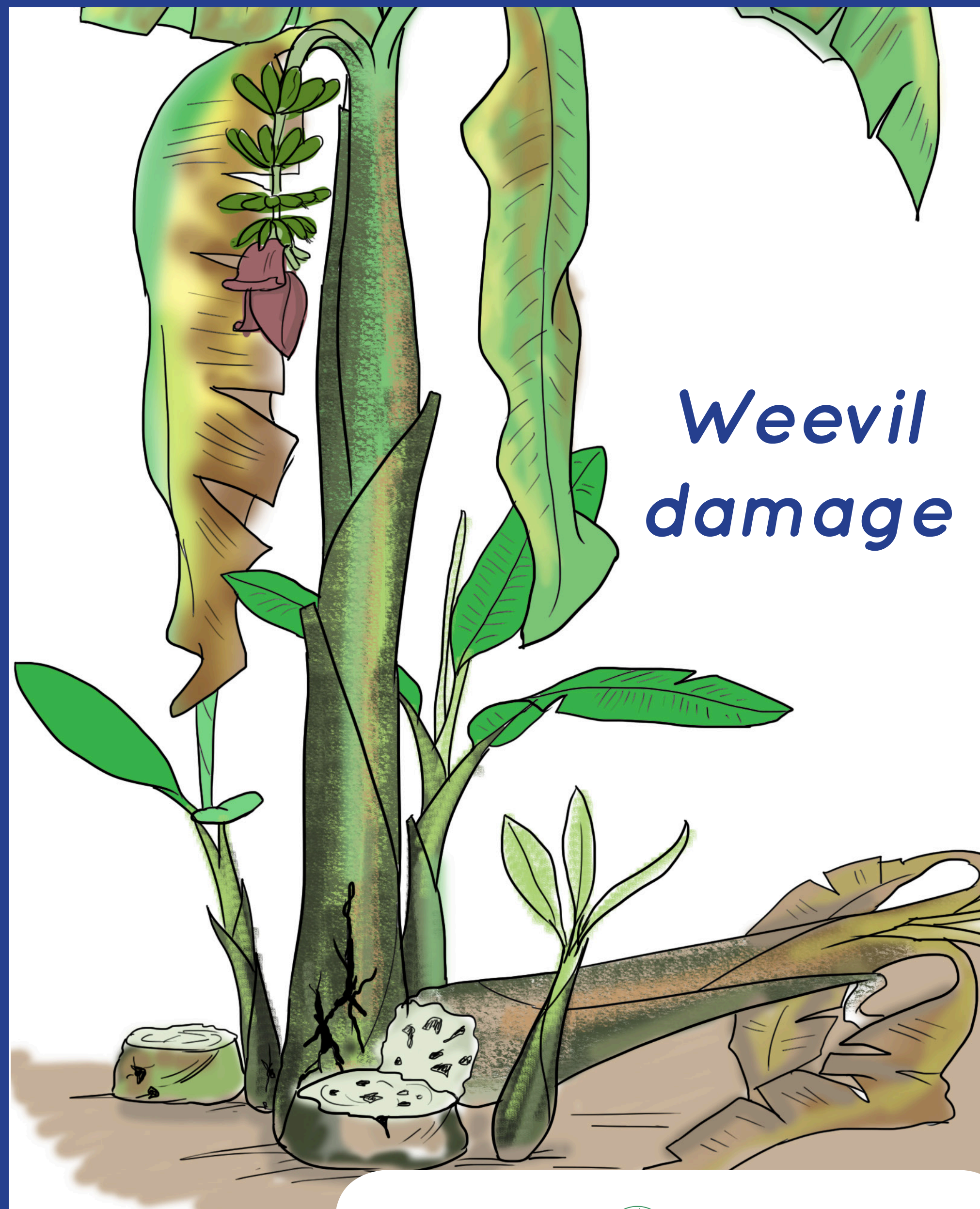


Larva



Pupa

Life cycle



Weevil damage

How to control banana weevil

i. Weevil trapping

Cut the corm using a panga. Use a cut pseudo-stem to cover the corm. Check after three days. Pick and crash the weevils.

ii. Chopping pseudo-stems

Chop the pseudo-stems into small pieces and spread them out to easily dry.

iii. Corm removal

In a clean field, leave corms immediately attached to suckers to support the mat and cover them with soil. Remove previous corms. Cut off damaged tissue if harvested corm is heavily damaged and leave the clean part to support the mat and cover with soil.

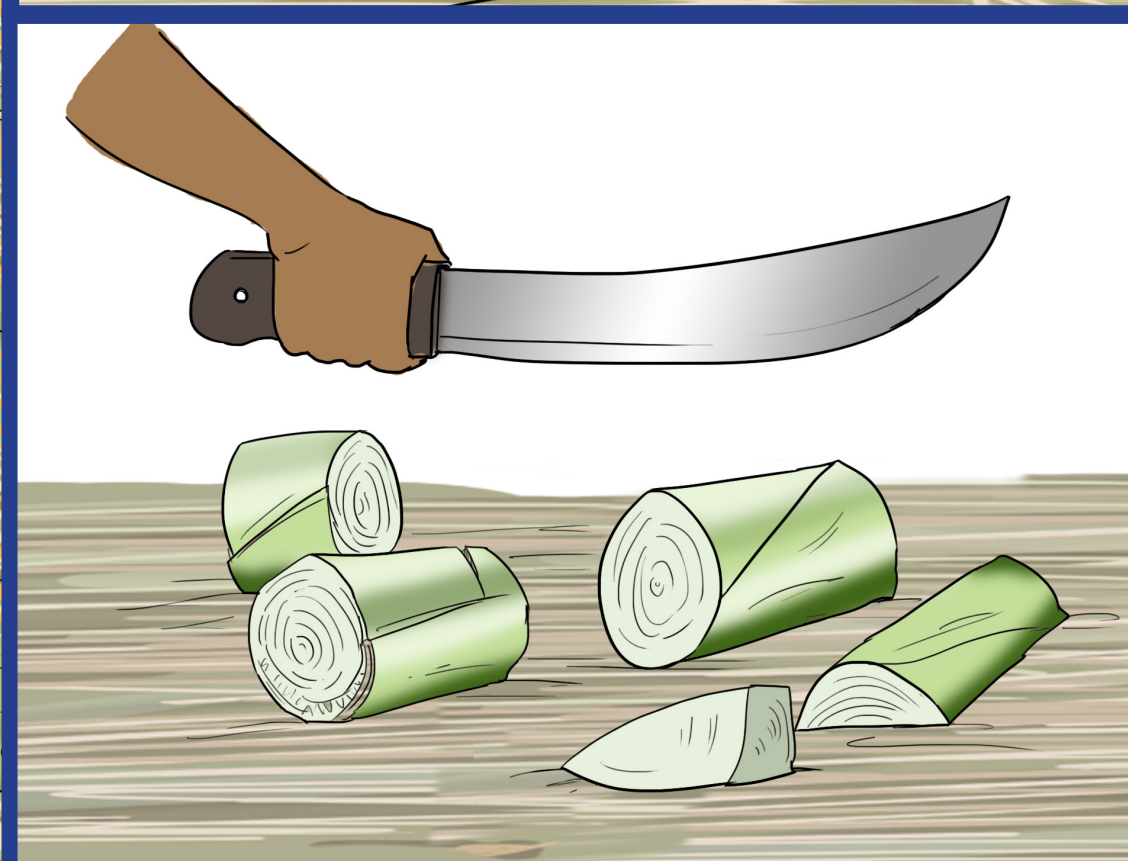
iv. Corm paring

Remove all roots and damaged parts of the corm from the sucker before planting (paring).

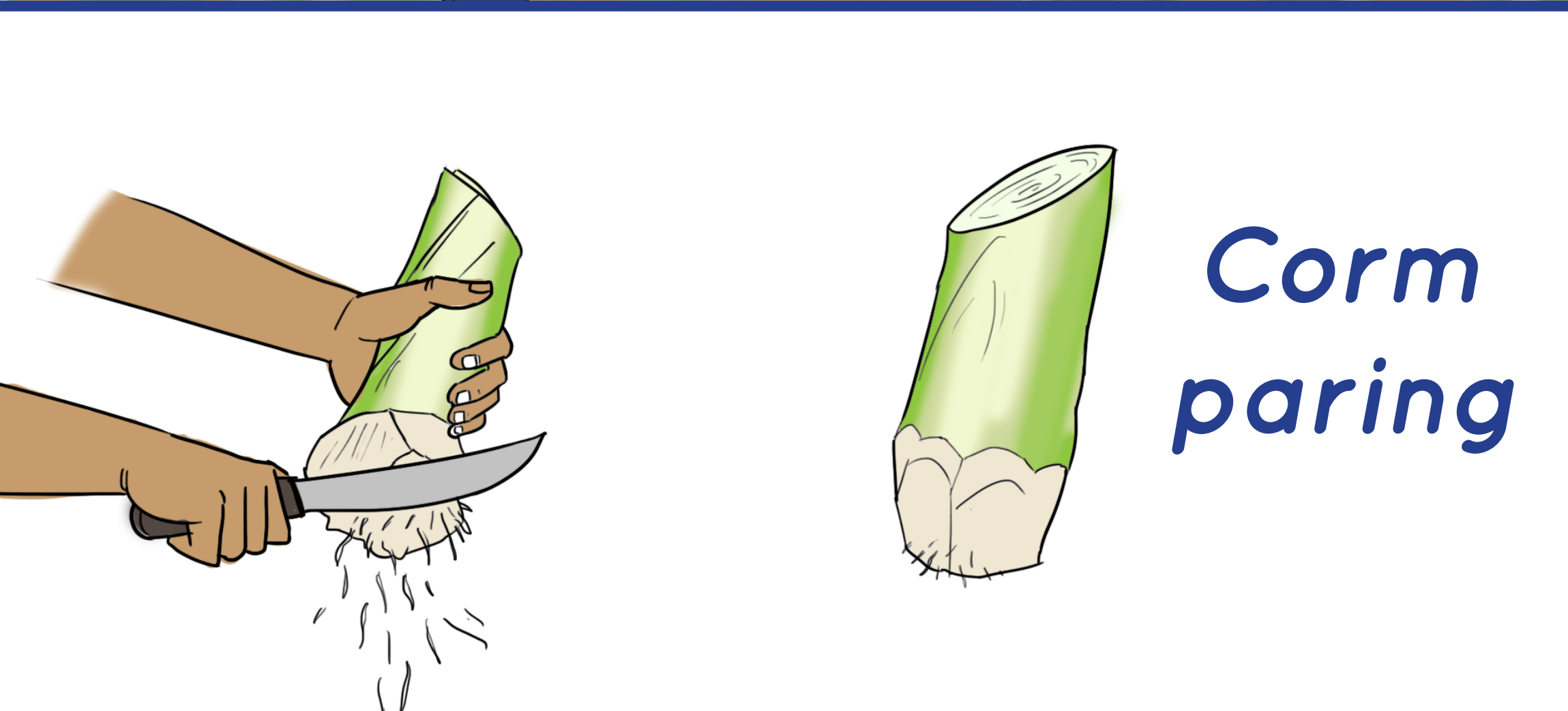
How to control banana weevil



Weevil trapping



Chopping pseudo-stems



Corm paring



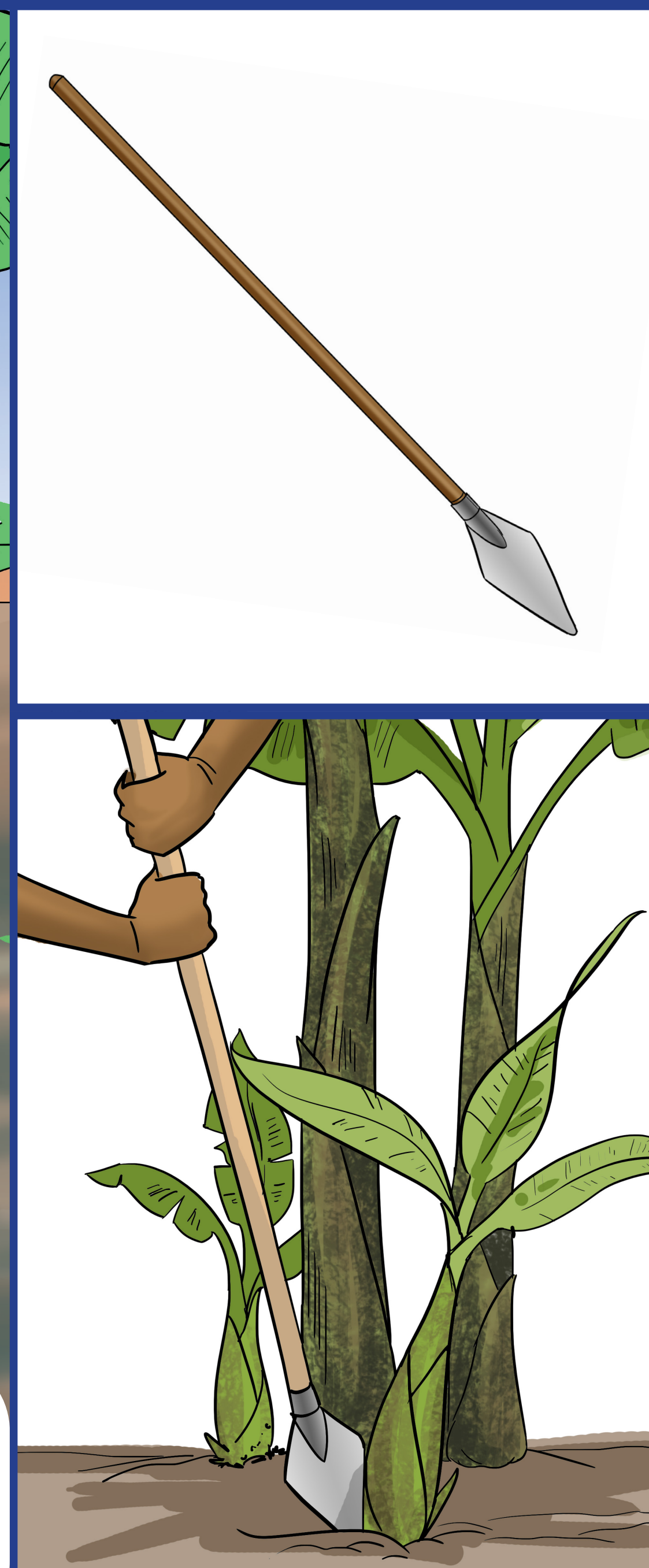
Corm removal

Desuckering

Peter continues to explain that in addition to weevil control, de-suckering is also important.

- De-suckering is the removal of excess suckers from the mat to maintain a manageable number of suckers. Use a de-suckering spear.
- Select suckers at different growth stages (in a staggered manner) to ensure all year-round production.
- Carefully select suckers to avoid injury to the mother plant and to avoid losing the best plants.
- For normal suckering varieties, maintain 3 plants per mat and 6 plants per mat for over-suckering varieties. In case of low fertility, low rainfall, as well as steep sloping areas, maintain 2 plants per mat.

De-suckering

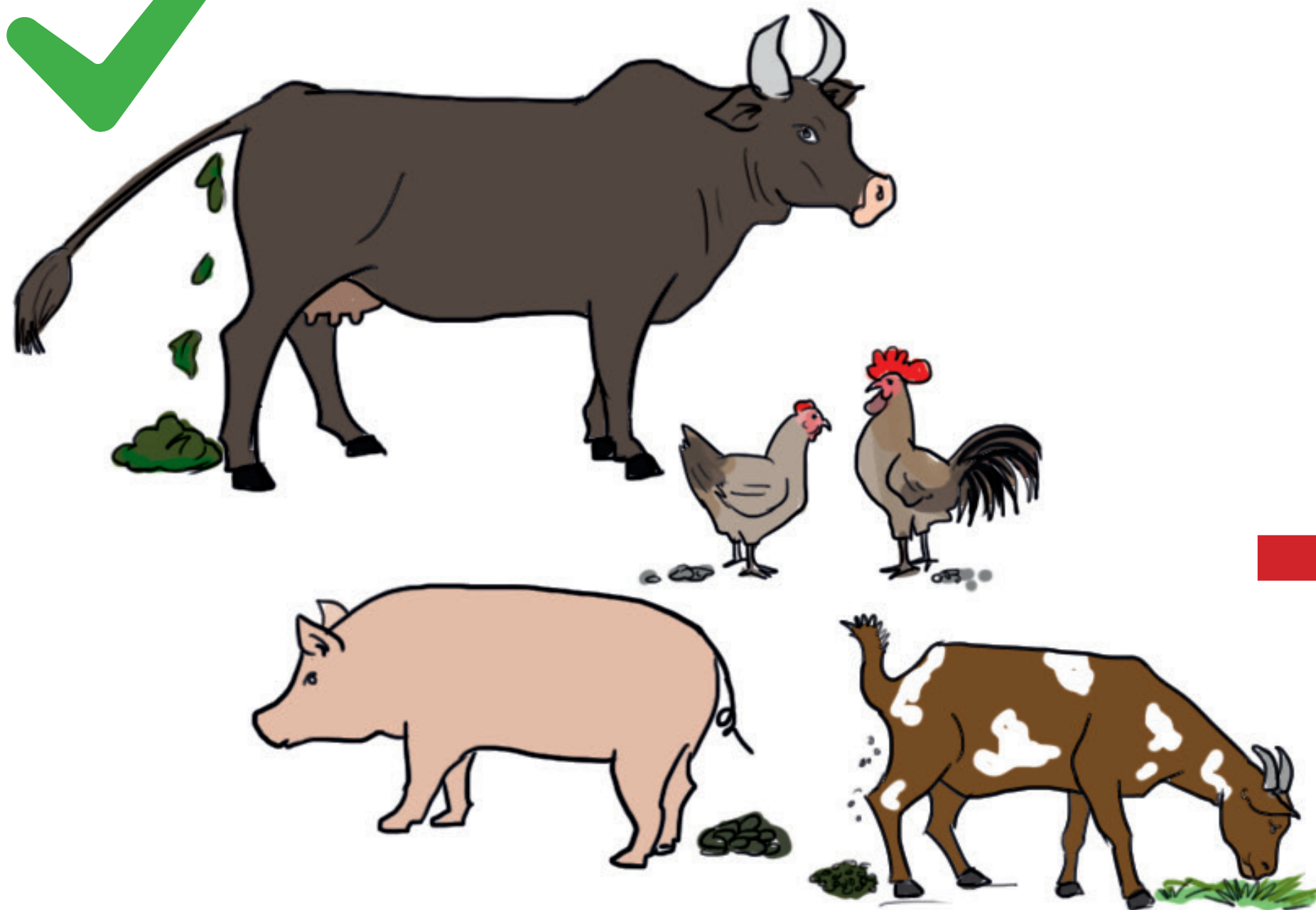
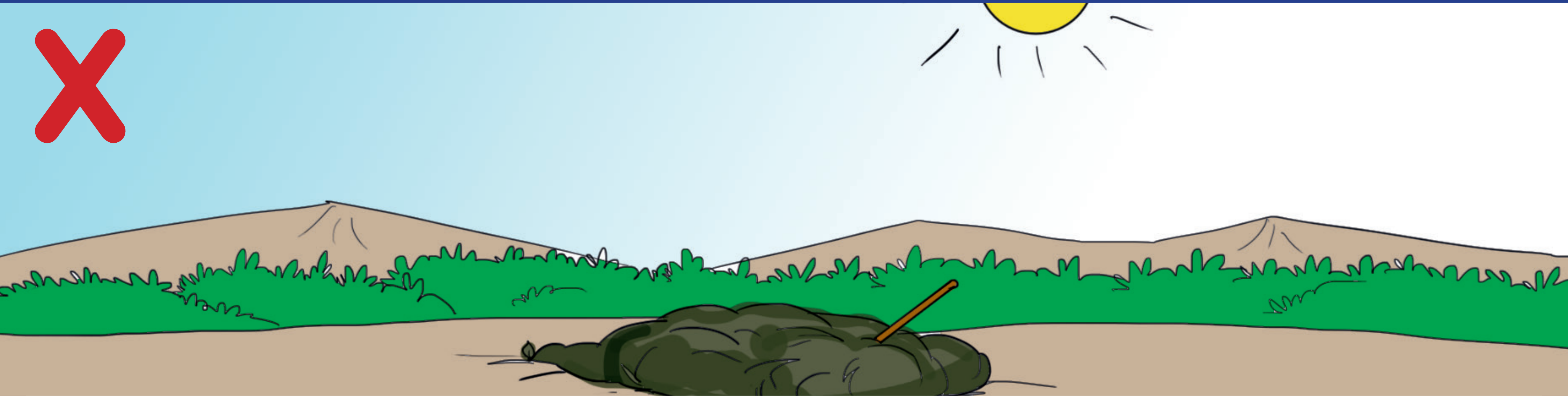


How to prepare farmyard manure

Peter continues to teach the other farmers about the use of manure. He began by showing them how to prepare it.

- Collect fresh animal manure using a spade. Heap it on a concrete floor or place it on top of a polythene or on a layer of maize stover to avoid leaching.
- Ensure that the manure is under a shade to avoid nutrient loss. Cover it with a thin layer of soil or with maize stover or Napier grass.
- Place a stick in the heap to monitor the temperature of the manure. Keep checking the temperature of the stick weekly until it is cold. Once cold, the manure is ready for application in the field.
- The farm yard manure will be ready for use after about one and a half months of decomposition.

How to prepare farmyard manure



How to prepare compost manure

Peter explains 2 methods of preparing compost manure

Bangalore method

Ingredients: water, ash, fresh grass, dry grass, cow dung, plant residues (e.g. maize stover or bean residues).

Dig a rectangular hole 1 foot deep. The length and width depend on the amount of raw material available.

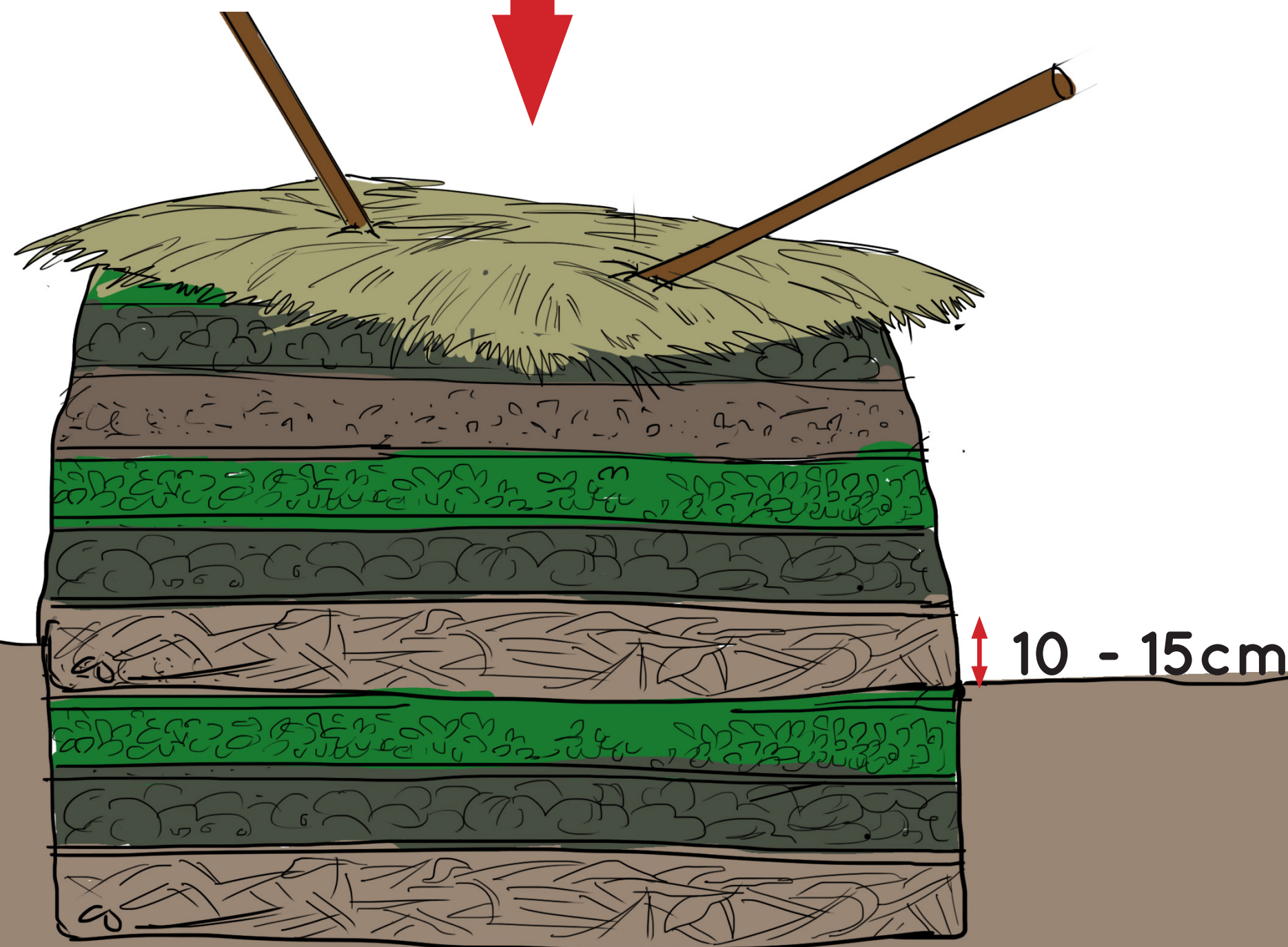
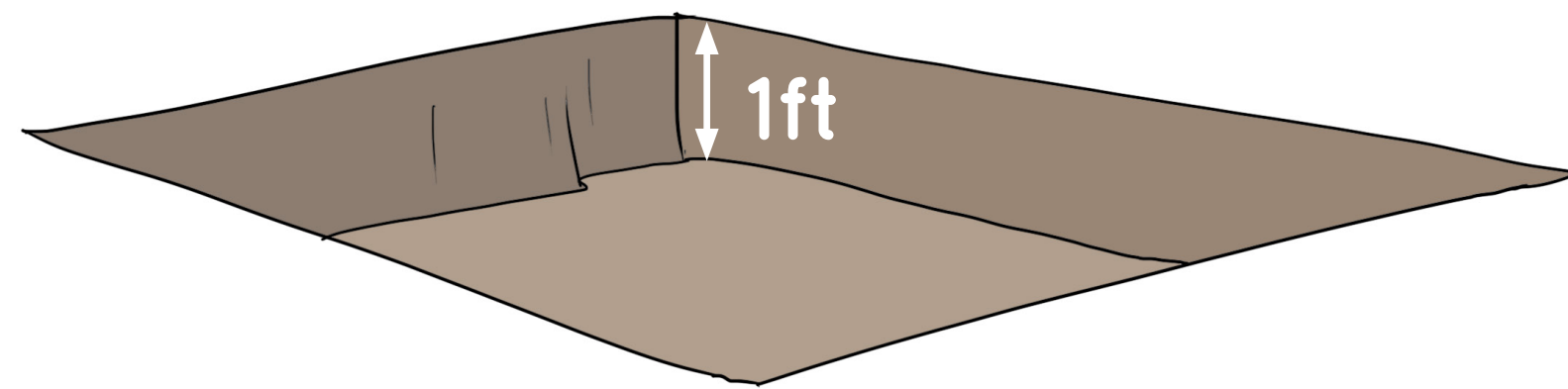
Make different layers 10-15cm each, using the ingredients while sprinkling water on each layer. Make first layer of crop residues e.g. maize stover, second layer of fresh grass preferably Calliandra, third layer of dry grass, fourth layer of cow dung/chicken droppings/kitchen refuse. Then sprinkle a layer of ash and repeat layers. Cover the top layer with soil.

The entire heap should be 2-4 feet above ground for proper aeration. Insert a straight stick diagonally and keep checking the temperature. Once the stick feels cold, then manure is ready. It takes 3-6 months for the manure to get ready for application.

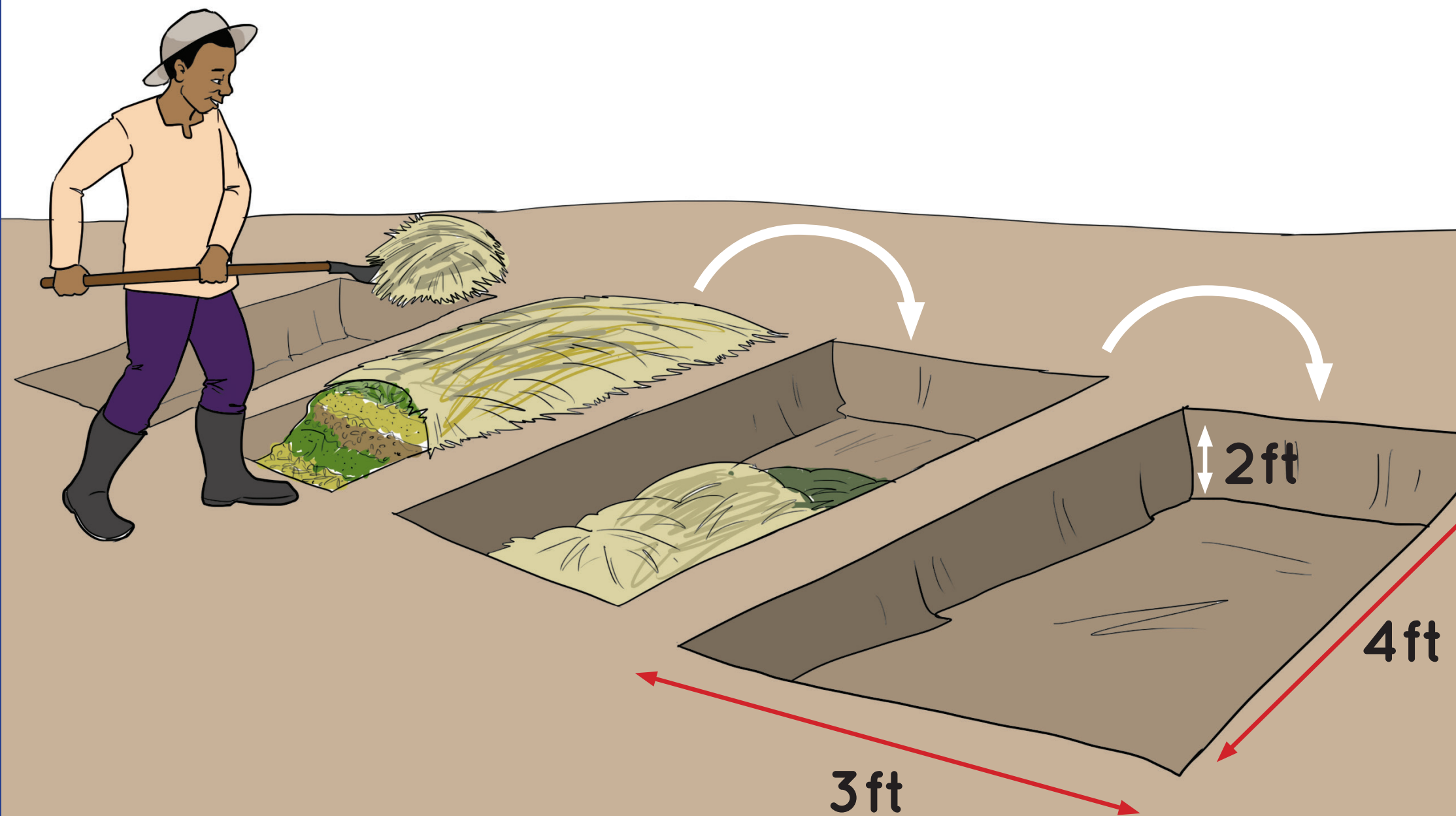
Indore method

Dig 4 pits adjacent to one another. Each pit should be 2 feet deep, 3-4 feet wide and the length will depend on the amount of raw material you have. Arrange the materials in layers as illustrated in the Bangalore method. Turn materials every 2 weeks for proper aeration by moving the materials from one pit to another. Do the first turning 10-15 days after filling the pit and the second turning 15 days after the first. Do the third/last turning 2 months after the second and apply in the field after fully decomposing. Water the pits during the dry season for easy decomposition.

How to prepare compost manure



Bangalore method



Indore method

How to apply manure

Peter advises farmers to apply 2 basins of manure per mat mixed with top soil at planting.

- For already established fields, fork around the mat then pour 2 basins of manure 2 feet away from the mat to allow proper root growth.
- Depending on the status of the mats, apply at least one basin per mat per year. Or make use of water troughs (basins) in between 4 neighbouring mats to apply the manure.

How to apply manure



When to apply manure

Peter informs farmers that it is advisable to apply manure prior to the rains so that the nutrients are released during the rains.

After that discussion Annet worries how she can do all that on her entire field given that she is constrained by resources.

Peter recommends phased manure application whereby they start applying manure to small portions of their gardens and expand gradually overtime as resources increase.

When to apply manure



Mulching

One of the farmers asks Peter, how he manages to maintain a healthy plantation amidst the dry spell.

“Peter replies that he uses mulch, trenches and basins which help to conserve water.”

He tells them mulching is important as it enables the soil to maintain water longer, reduces soil erosion, improves soil fertility and suppresses weeds.

They can get external mulch from dry crop residues, maize stover, napier grass that is weed free. Avoid use of pest and disease affected materials.

Apply mulch mid-way the rains (after the soil is saturated).

Note: External mulch improves the soil nutrients whereas internal mulch just contributes to replacing some of the nutrients that had been taken out of the garden during production

Mulching



How to apply mulch

- Peter advises the farmers to start with mulching a small portion of the garden that they can manage and expand gradually
- Place mulch 2 feet away from the mat to allow space for forking, control weevils and for proper root growth.
- Mulch should be 8-15cm or 1/2ft thick

How to apply mulch



Water conservation structures

Peter continues to explain the use of trenches and basins in water conservation. They are used to collect running water for future use.

Trenches:

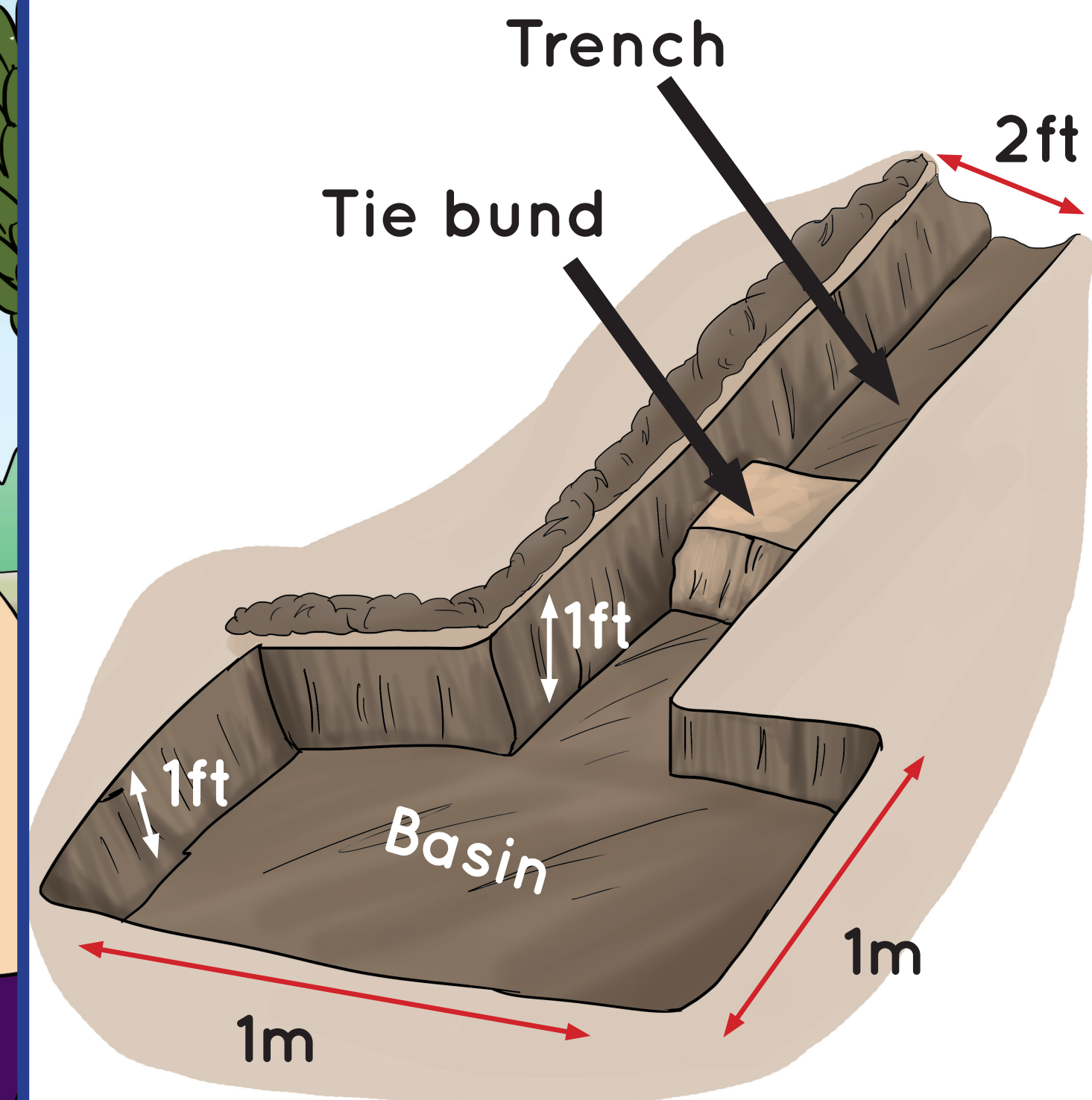
Trenches can be continuous or with tie bands. They should be at least 2 feet wide to harvest enough water. Make continuous trenches for gentle and uniform slopes. Vary depths at different points to enable water retention in field.

Use tie bunds for steep gradients or multidirectional slopes. The band should be 1 foot. When constructing the first trench uphill, the soil should be put on the lower side (**Fanya chini**) to harvest water into your field. For the last trench downhill, soil should be placed at the upper side (**Fanya juu**). Other trenches within the field can be alternated. Plant grasses such as Vetiva, elephant grass on the Fanya juu or fanya chin to stabilise it.

Basins:

Basins/small water troughs are useful in retaining water within the field. They should be 1m (length) x 1m (width) x 1 foot (depth). The basins are designed based on the size of the slope. The larger the size of the basin, the better. The basins can also be used as points for chopping pseudo stems and addition of manure.

Water conservation structures



Selection of planting materials

A farmer requests Peter for some suckers to plant in his plantation. Peter agrees to offer him some and further encourages the farmers to always plant drought tolerant, disease resistant and market preferred varieties.

Peter also emphasizes that to prevent pests and diseases hybrid bananas are available. These include, M9 (Kiwangazi), M2, NAROBan3 and NAROBan4

Selection of planting materials



Water sucker

Enterprise diversity

Peter also encourages the farmers to take up enterprises that complement bananas such as:

- **Livestock production**

They produce waste that can be used as manure. Banana peels can be used as feed for the livestock.

- **Agroforestry**

Planting trees on the boundaries of the banana plantation acts as wind breakers. Species such as Calliandra and Sesbania can be used as animal forage and compost manure.

- **Growing legumes**

Integrating legumes such as beans in new (young) plantations improves soil fertility. Beans are a source of food too and residues can be used as mulch.

- **Coffee-banana intercrop**

Intercropping bananas with coffee following recommended spacing can optimize returns. For every 2 rows of banana, plant one row of coffee.

Enterprise diversity



What next?

Peter urges the farmers to put what they have learnt into practice. He encourages them to even take up more practices to improve their productivity. He informs them about his next steps of using fertilizers and practicing irrigation to further increase his productivity.

What next?



Impact after one year

Both Annet and Fred practiced what Peter taught them and their banana productivity increased (both quality and volumes). Currently they do not have to take their bananas to the market since buyers (trucks) collect bananas directly from their farms.

Impact after one year



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