

# How to make & use FERMENTED LIQUID BIO-FERTILISERS

English

## What are fermented liquid bio-fertilisers?

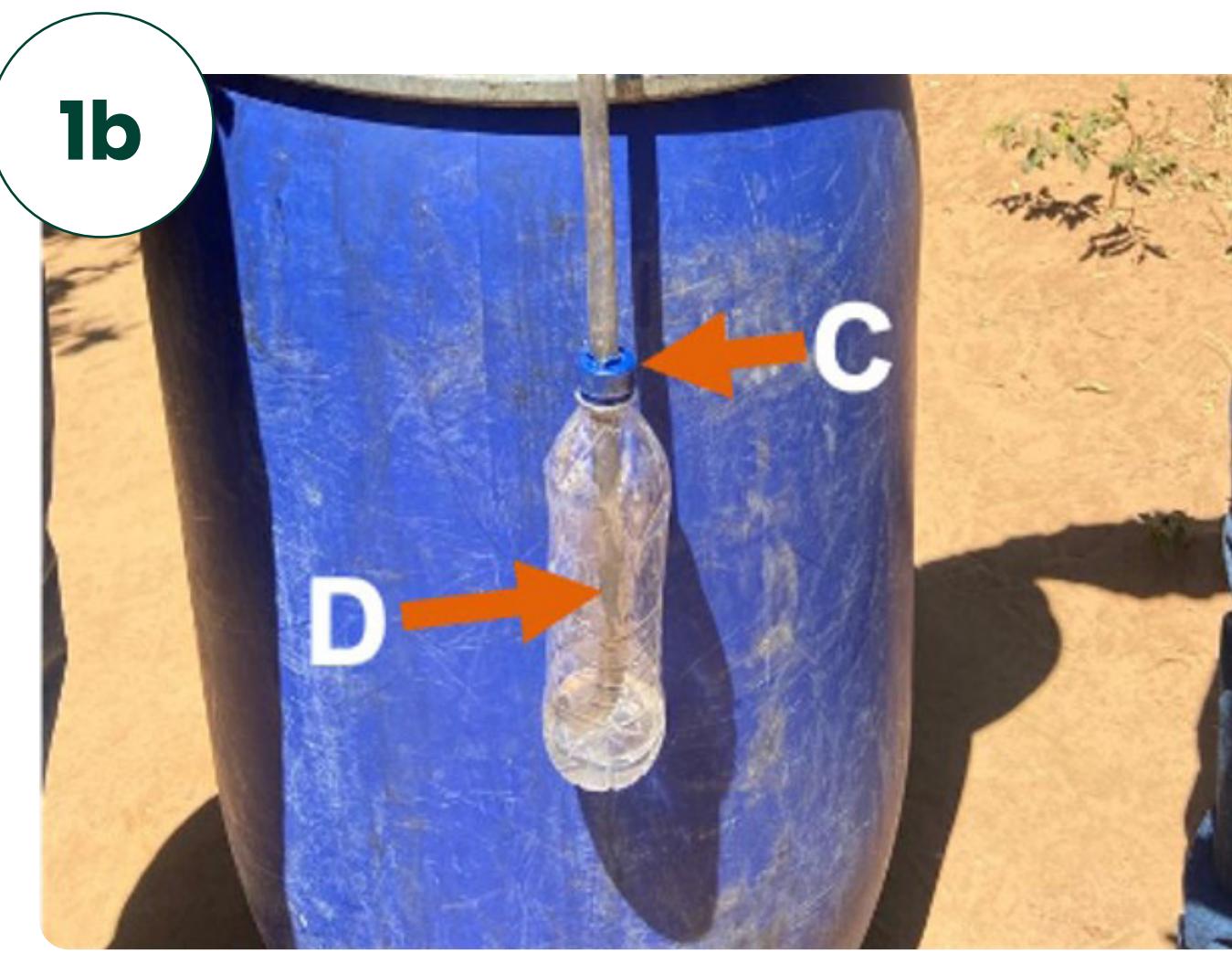
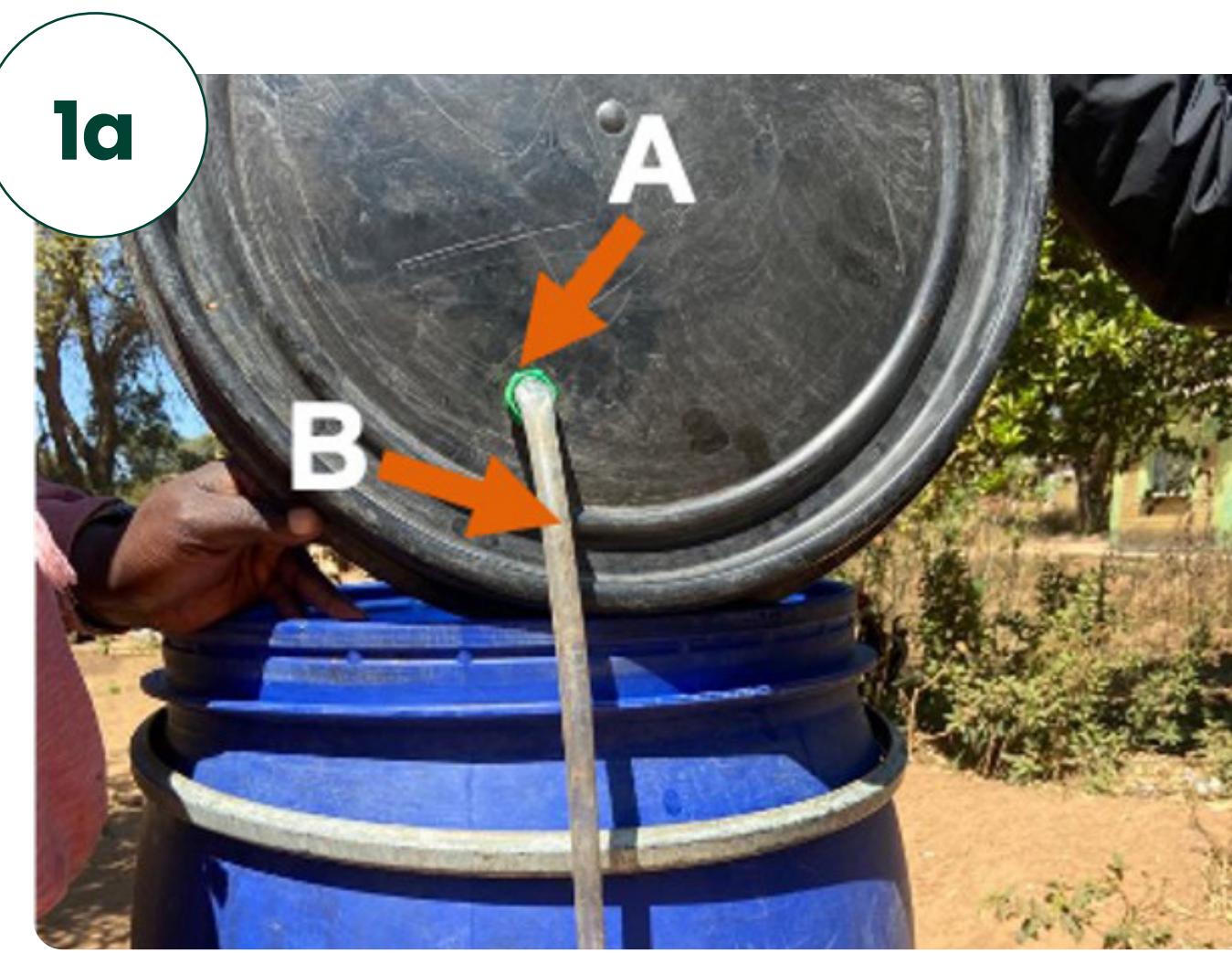
Fermented bio-fertilisers are made from manure and other materials mixed into a liquid that contains nutrients and micro-organisms.

## Why use them?

Fermented liquid bio-fertilisers support life in the soil, making it more fertile and providing food for plants to grow. They help plants stay healthy and contribute to the establishment of helpful bacteria and fungi that keep in check harmful ones that could damage plants. They can be used instead of chemical fertilisers. This saves farmers money and is better for the soil.

## What you need:

- 1 by 50-kilogram sack fresh cow dung.
- 4 litres milk or whey.
- 4 litres molasses or sugar cane juice (dilute 1 kilogram of brown sugar in 4 litres of water).
- 4 kilograms wood ash.
- 500 grams yeast.
- 180 litres water (clean and with no chlorine).
- 2 kilograms mineral salts (optional)
- 200-litre plastic drum.
- 1 small drum (minimum 20 litre) for mixing
- Transparent (see-through) hose pipe (1 metre long and 1 centimetre to 1.25 centimetres in diameter attached to the valve or nipple by a jubilee clip)
- Irrigation coupling piece.
- Disposable plastic bottle (mineral water bottle 1 or 2 litre).
- A wooden stick.
- Plastic glue
- Rubber



## PREPARE AIR-TIGHT DRUM

You will need a 200-litre drum. It is very important that no air can enter the drum once you have filled it with the bio-fertiliser. Follow the steps below to make an air-tight drum. Step 1: At point A, make a hole in the drum lid to fit the size of the pipe (B). Step 2: Insert the pipe in the hole and tightly seal the hole with plastic glue.

Step 3: At point C, insert the other side of the pipe (B) into the plastic bottle. The size of the bottle to use depends on the size of the pipe. Step 4: Fill the bottle with water. Ensure that the other end of the pipe (D) ends inside the water in the bottle at all times as it prevents air to enter in the drum (if necessary refill water in the bottle).

Once the drum is full of the bio-fertilizer, you will see air bubbles appear in the water. This means that fermentation has started. Make a hole on the lid of the drum.

Push in the valve or rubber into the hole and push in the nipple. Connect pipe on the outside.



## MIX MANURE AND WATER

Pour 100 litres of clean water into the 200-litre drum. Add the 50 kilogram sack of fresh cow manure and 4 kilograms of ash. Stir until all ingredients are mixed well together.



## PREPARE SECOND MIXTURE

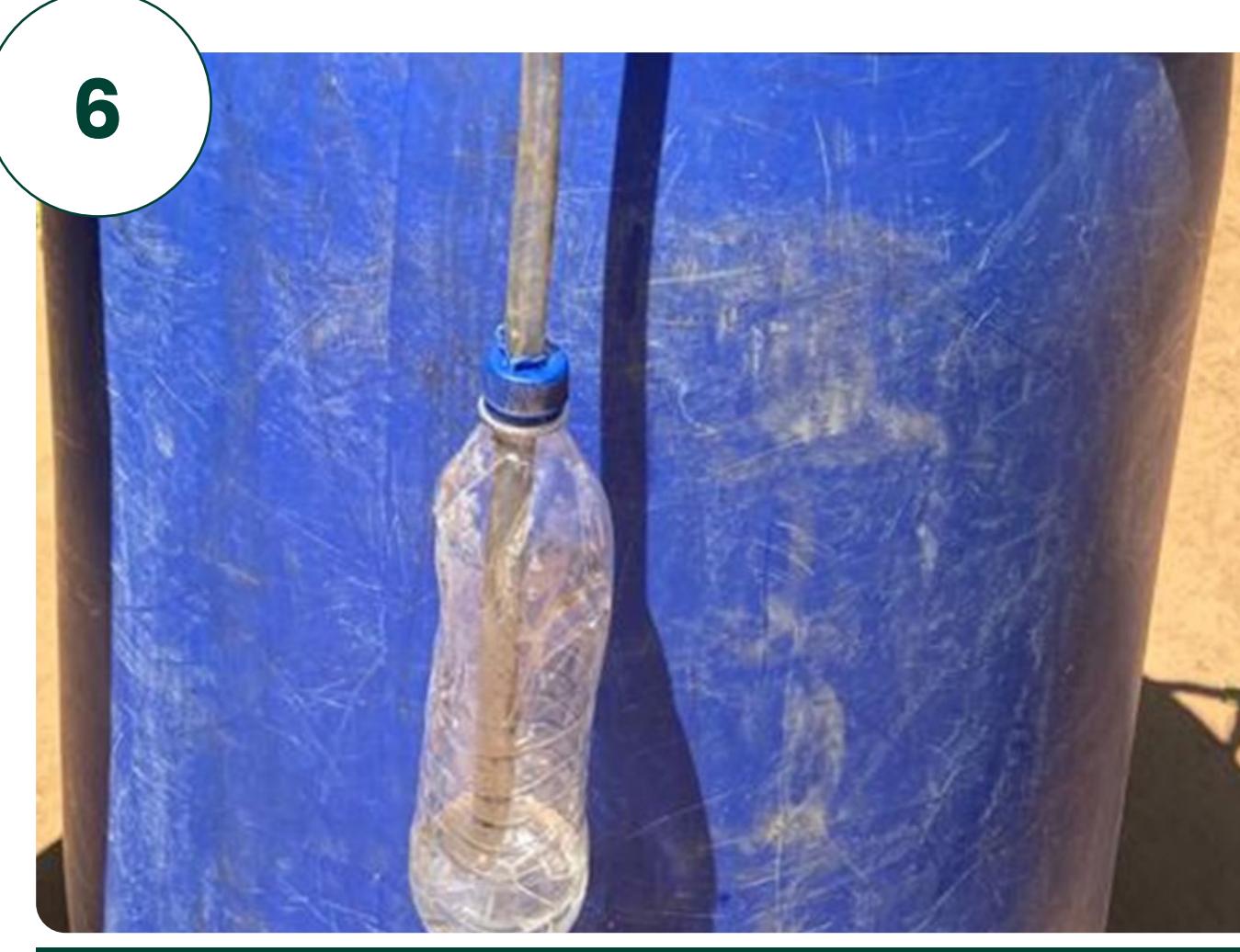
Pour 10 litres of clean water into a separate container.

Add 4 litres of whey or milk and 4 litres of molasses or sugarcane juice. Mix everything together well. Add this mixture to the solution in the 200-litre drum and stir well. Mix everything together well.

Add this mixture to the solution in the 200-litre drum and stir well.

Fill the 200-litre drum with water up to the 180-litre mark. Add 500 grams yeast. Mix well.

Cover the drum with a lid (airtight) to start the process of fermenting the mixture. Keep it in the shade to protect it from rain and heat. The best temperature is 38–40°C (like the temperature in the stomach of a cow).



## APPLYING BIO-FERTILISERS

Keep drum sealed for 3–4 weeks to allow the fermentation to happen. In cold places it can take 8–12 weeks. Look at the bottle. If gas is no longer being released (there are no bubbles in the plastic bottle), fermentation has stopped. You can now open the drum.

The bio-fertiliser is ready when it smells like alcohol, is foaming on top and the colour is reddish-brown and slightly transparent. It is not ready when the surface cream is green and the colour of the liquid is cloudy. As air has entered already in the drum it cannot be closed anymore. It can be used, but is not of good quality and won't last long.

Once the drum is open, you cannot close it again to continue fermenting as the liquid has been exposed to oxygen. Something has gone wrong if it smells rotten, is a very black colour on the surface and blue underneath or has mould on top. It should not be used because it might introduce the wrong bacteria in your soil.

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