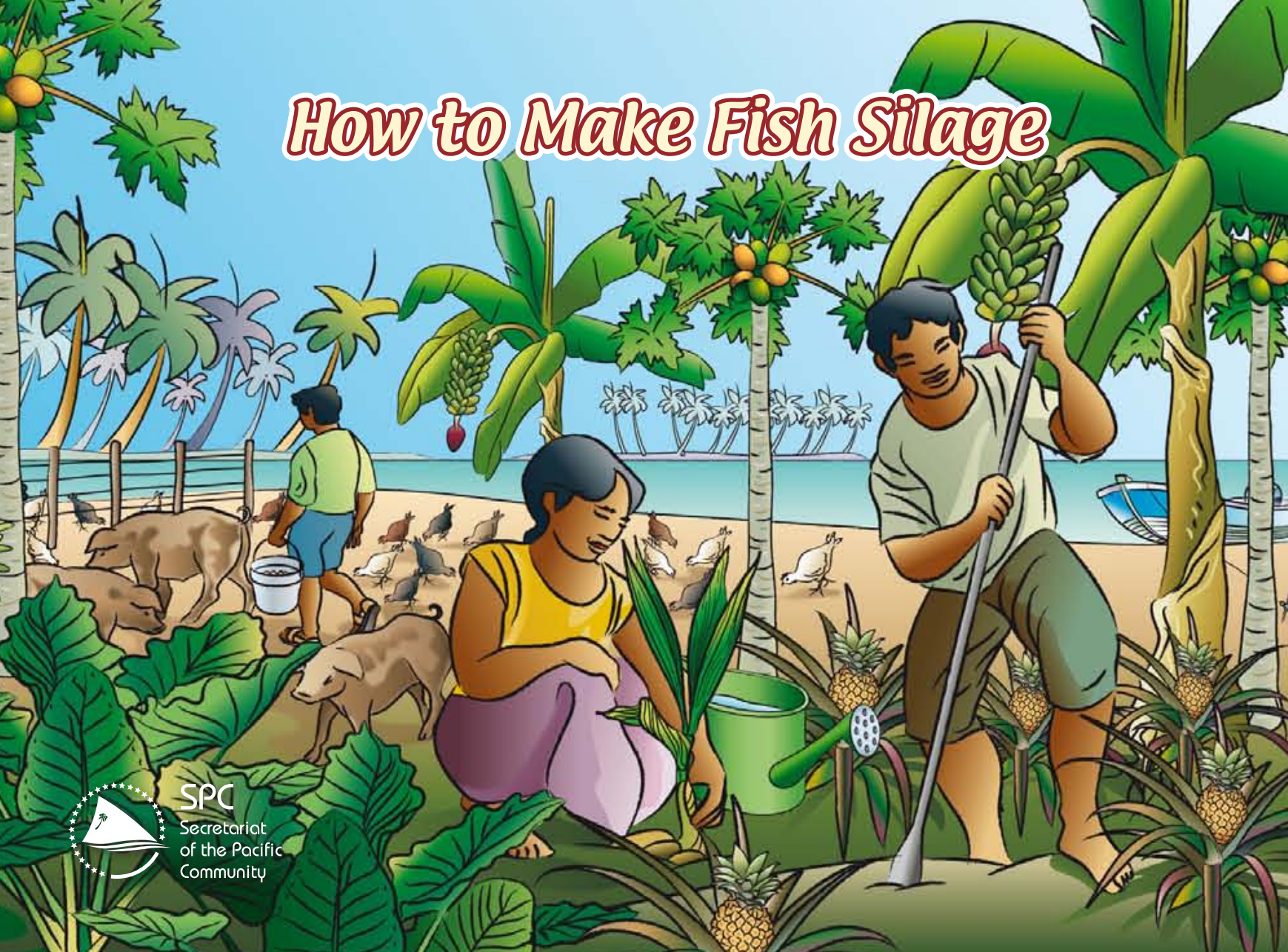
How to Make Fish Silage



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How to Make Fish Silage

Written by Michel Blanc and illustrated by Jipé Le-Bars

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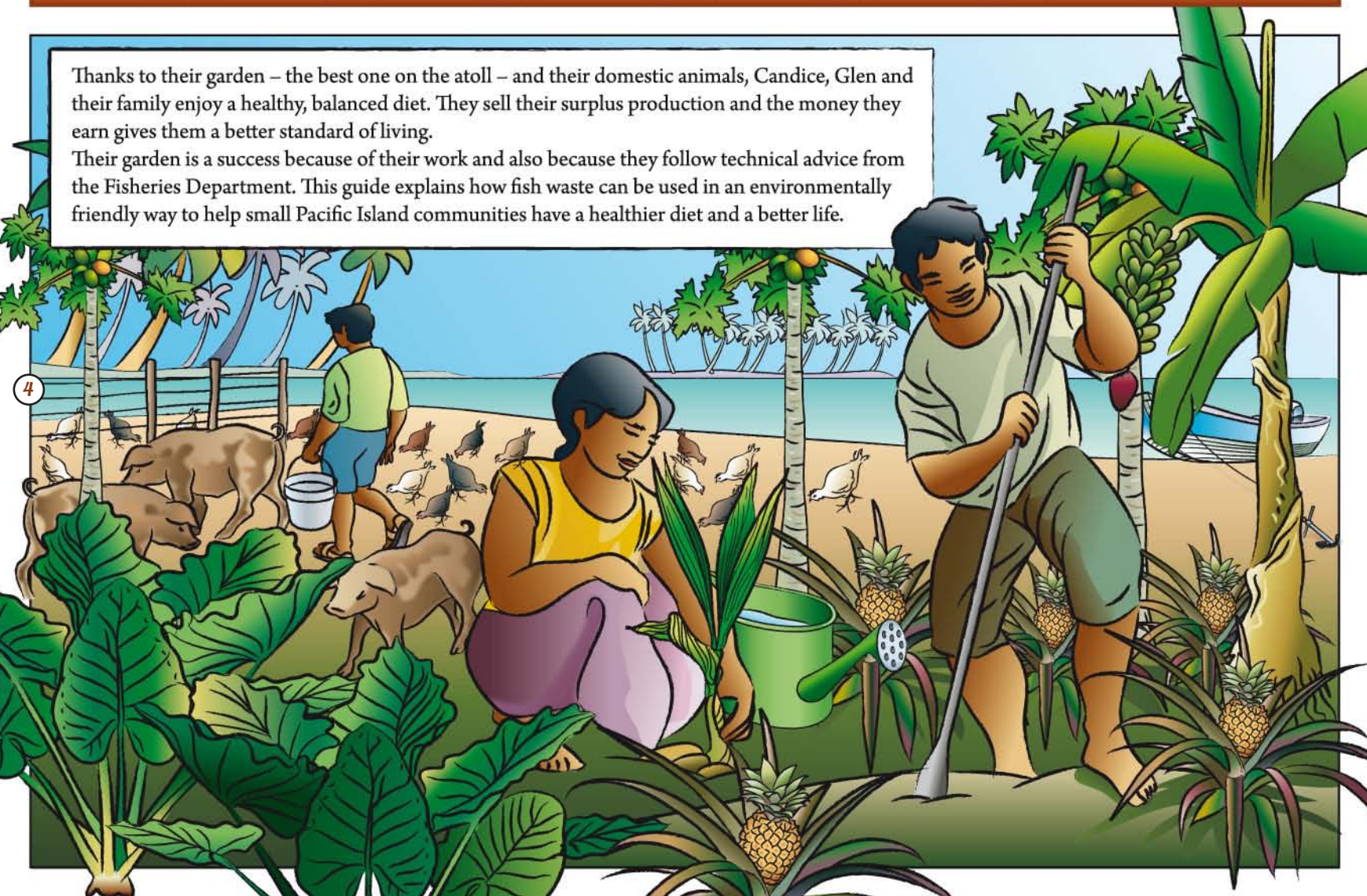
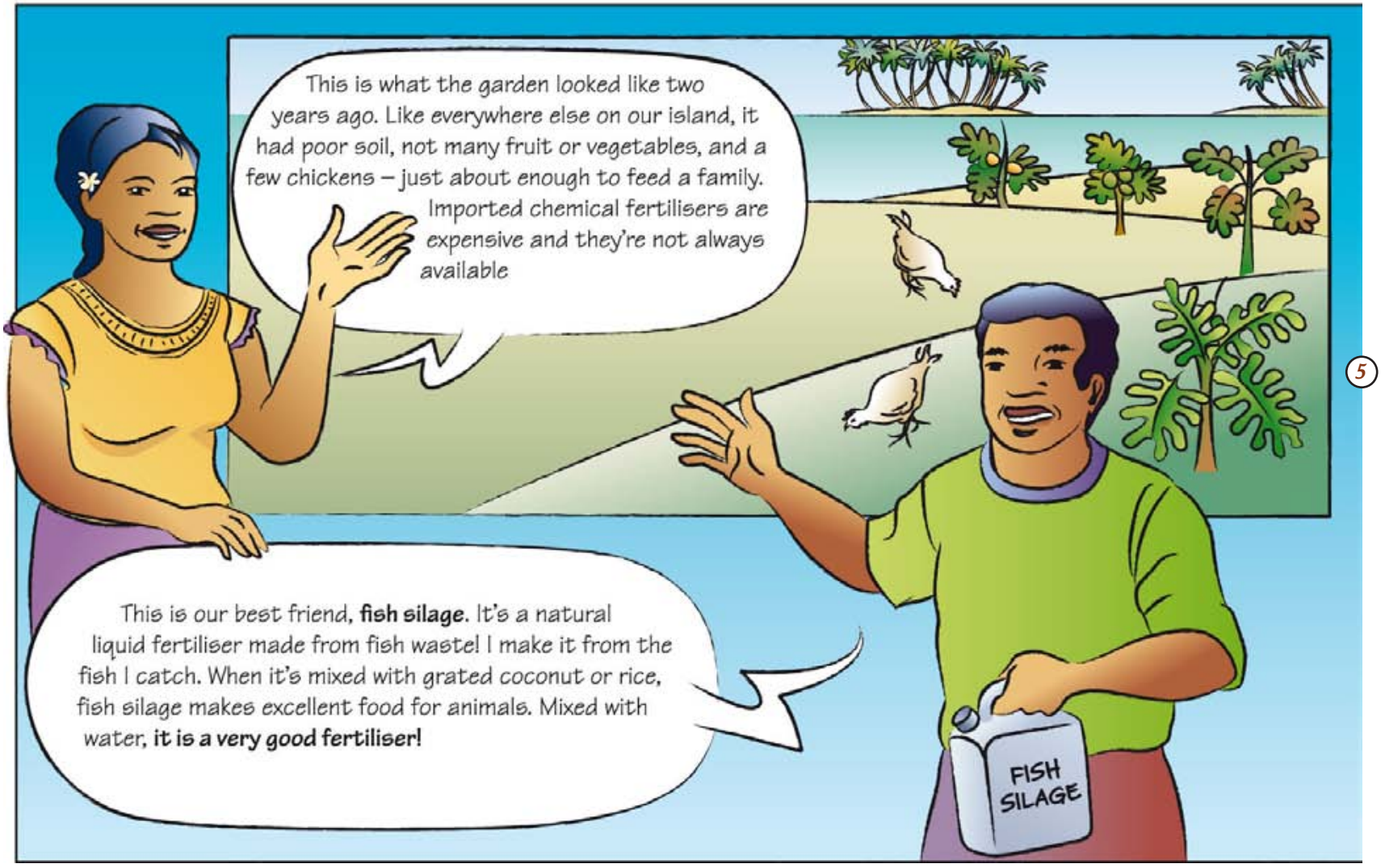
SOMEWHERE IN MICRONESIA...



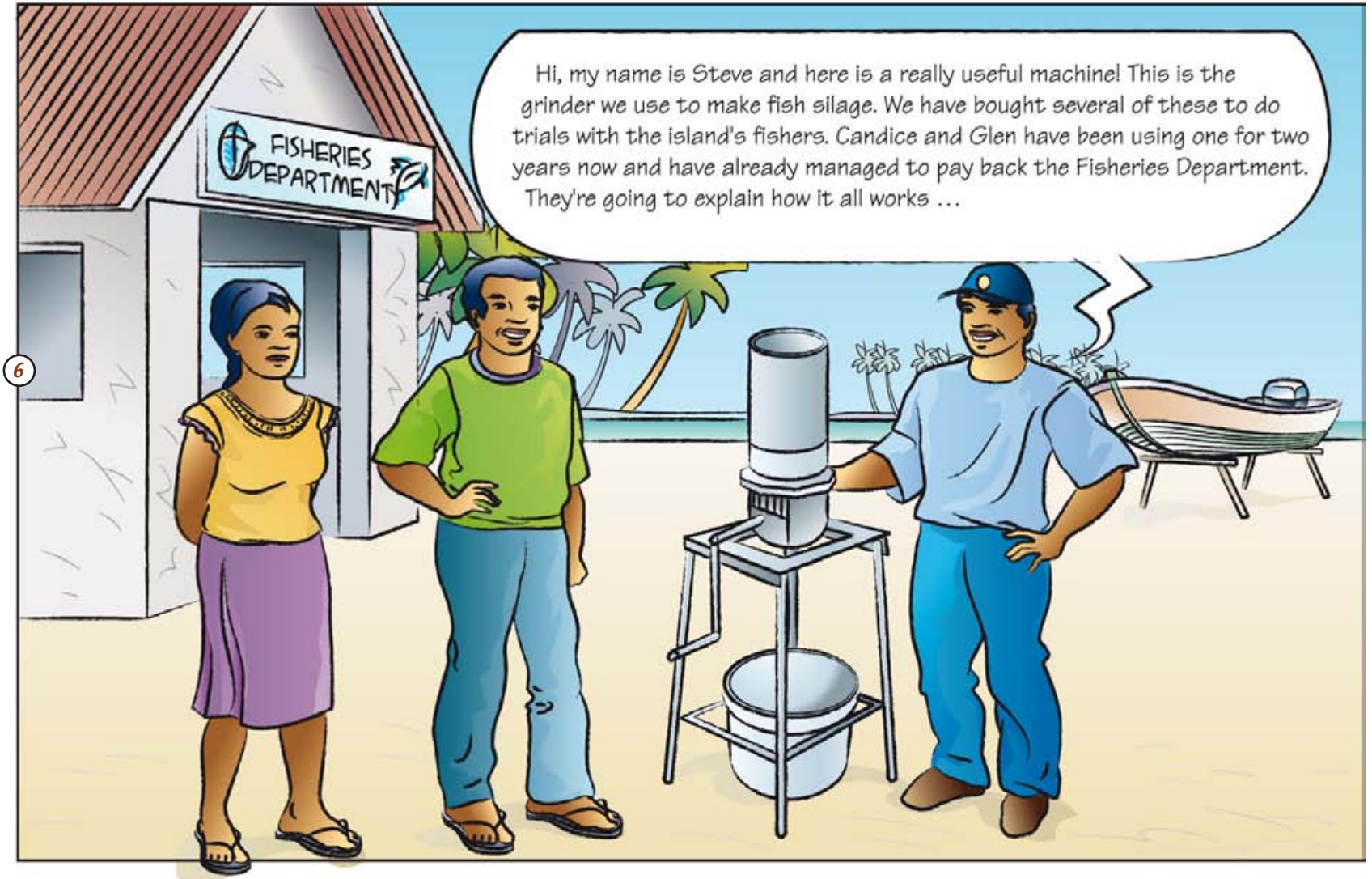
Thanks to their garden – the best one on the atoll – and their domestic animals, Candice, Glen and their family enjoy a healthy, balanced diet. They sell their surplus production and the money they earn gives them a better standard of living.

Their garden is a success because of their work and also because they follow technical advice from the Fisheries Department. This guide explains how fish waste can be used in an environmentally friendly way to help small Pacific Island communities have a healthier diet and a better life.

MAKING FISH SILAGE



THE HAND GRINDER



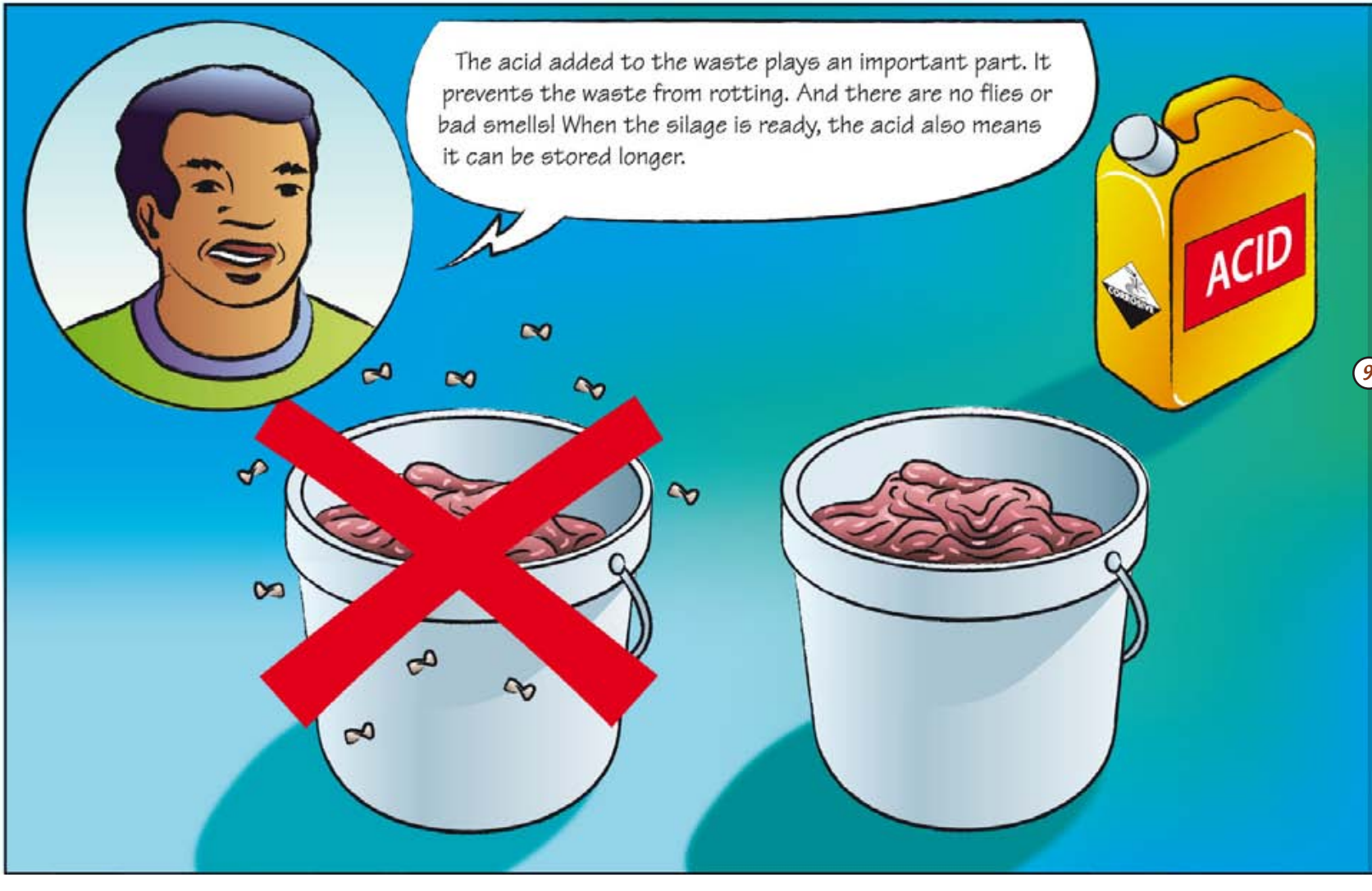
EQUIPMENT NEEDED TO MAKE SILAGE

THE ROLE OF THE VISCERA (GUTS)

The fish waste used to make silage must be fresh. If it is of poor quality, the silage will also be poor and therefore not usable. If you have a freezer, you can freeze the fish waste until you have gathered enough material to begin making silage.

It is very important to use the fish viscera because they contain the enzymes which will break down the waste and turn it into silage.

THE ROLE OF ACID

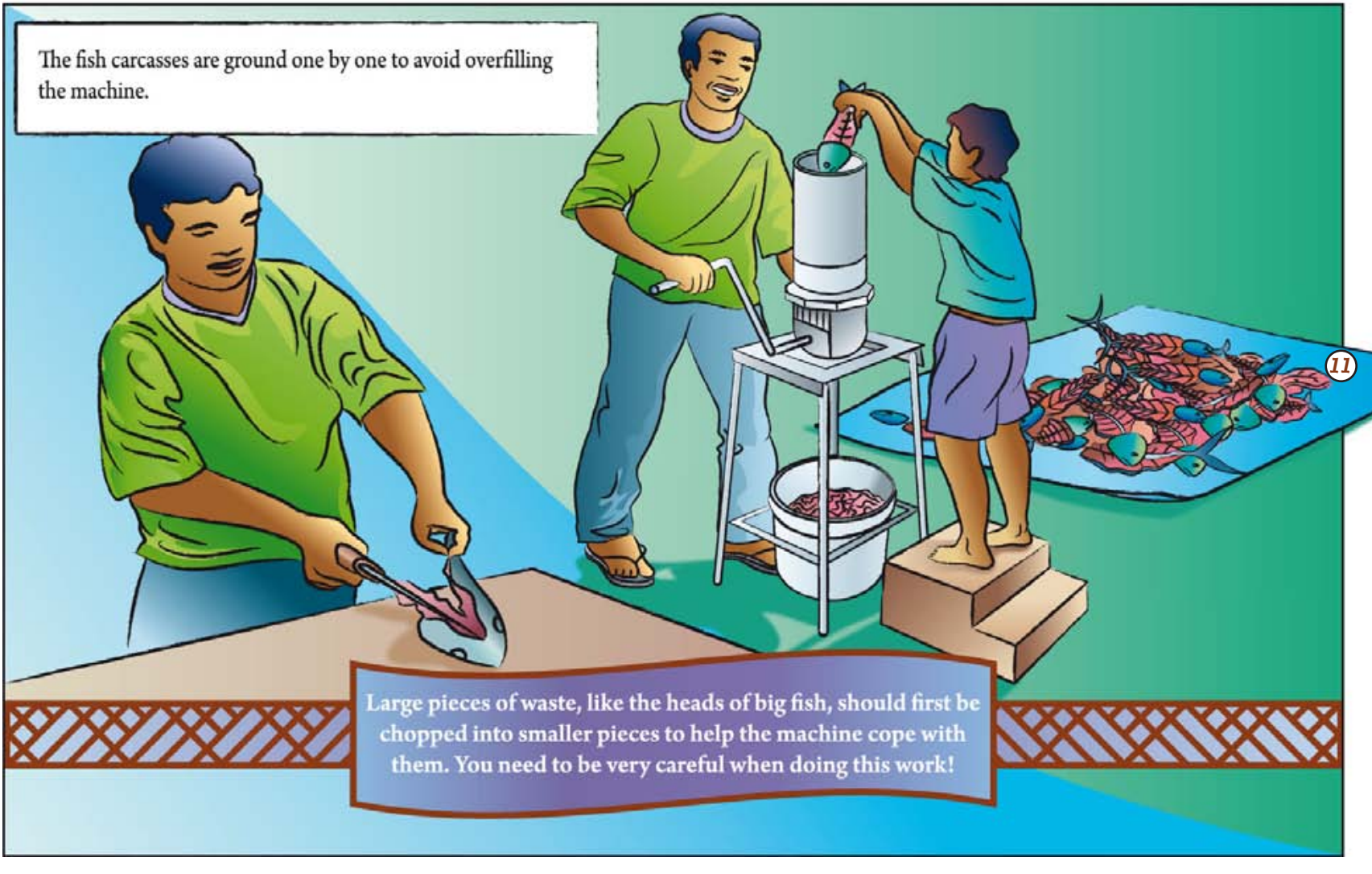


SAFETY

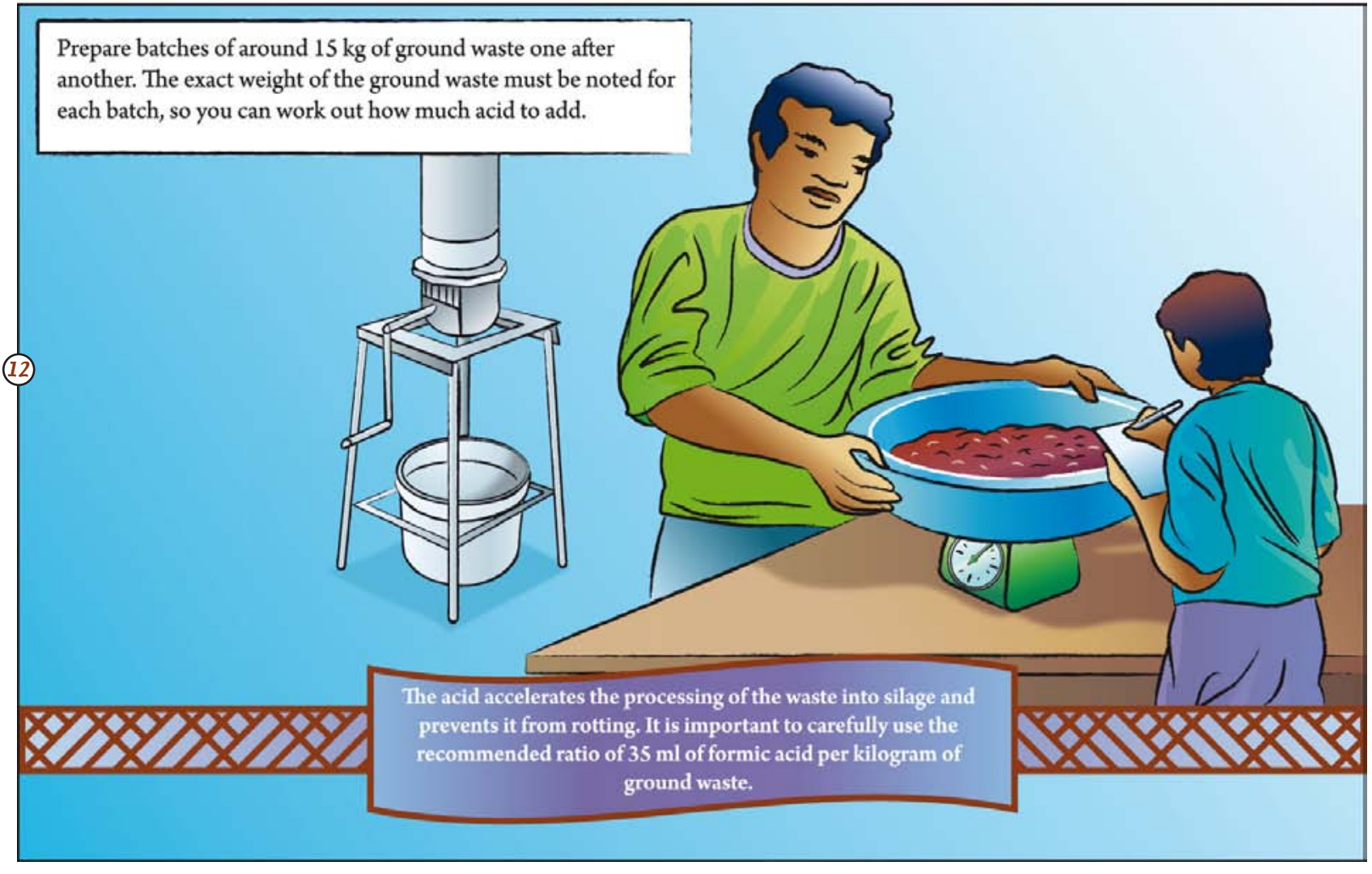
The recommended acid is formic acid. Although it is not as corrosive as hydrochloric or sulphuric acid, it can still cause burns. So you must carefully protect your eyes and hands when handling it. If it touches your skin, you need to carefully wash the area concerned with clean water for several minutes.

Before starting to make silage, you can prepare small batches of acid in glass containers, which are easier to handle than a big drum of acid. Use glass containers or acid-resistant plastic ones. Never use metal containers.

GRINDING THE WASTE



WEIGHING THE GROUND WASTE

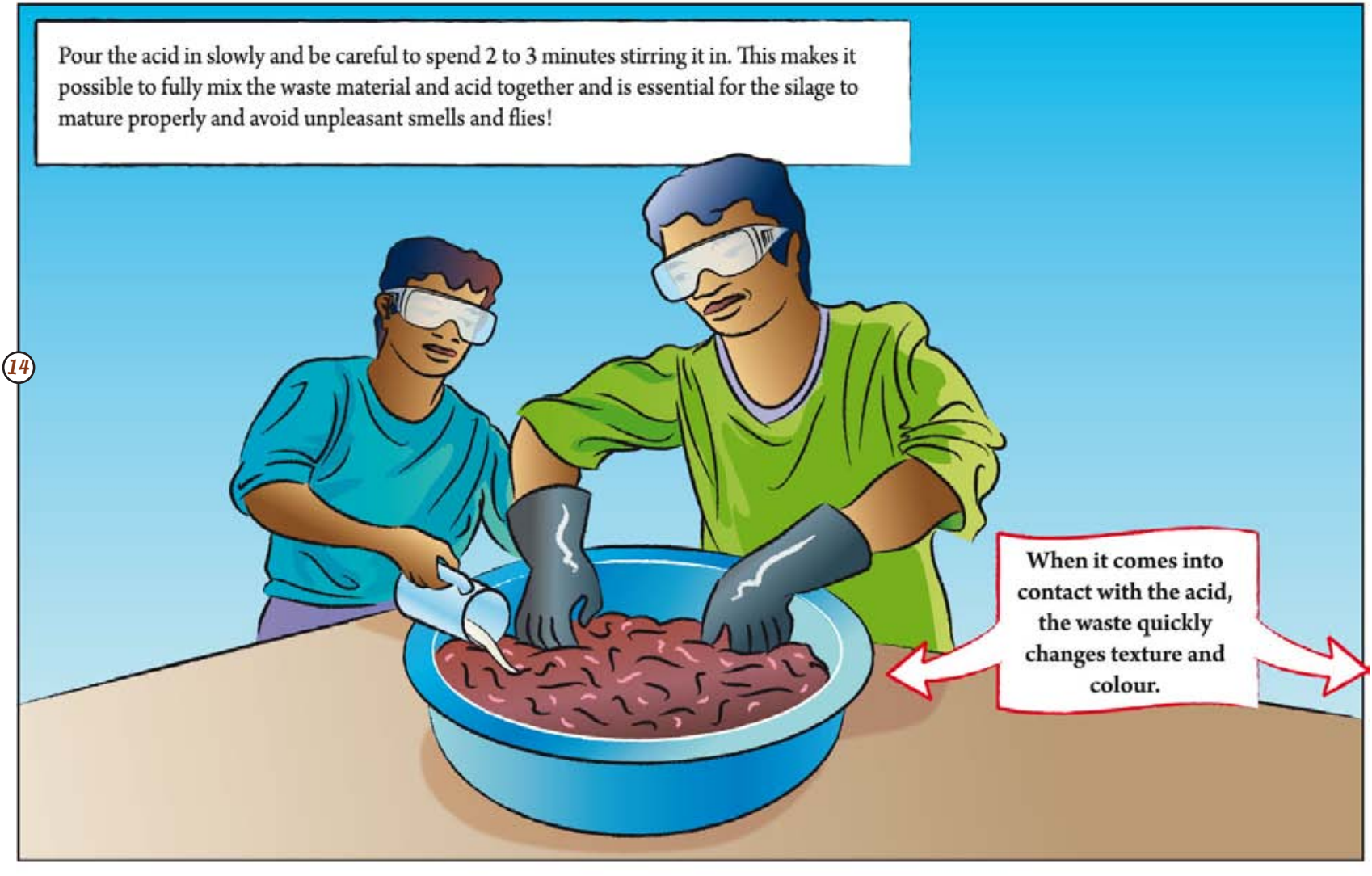


MEASURING THE ACID

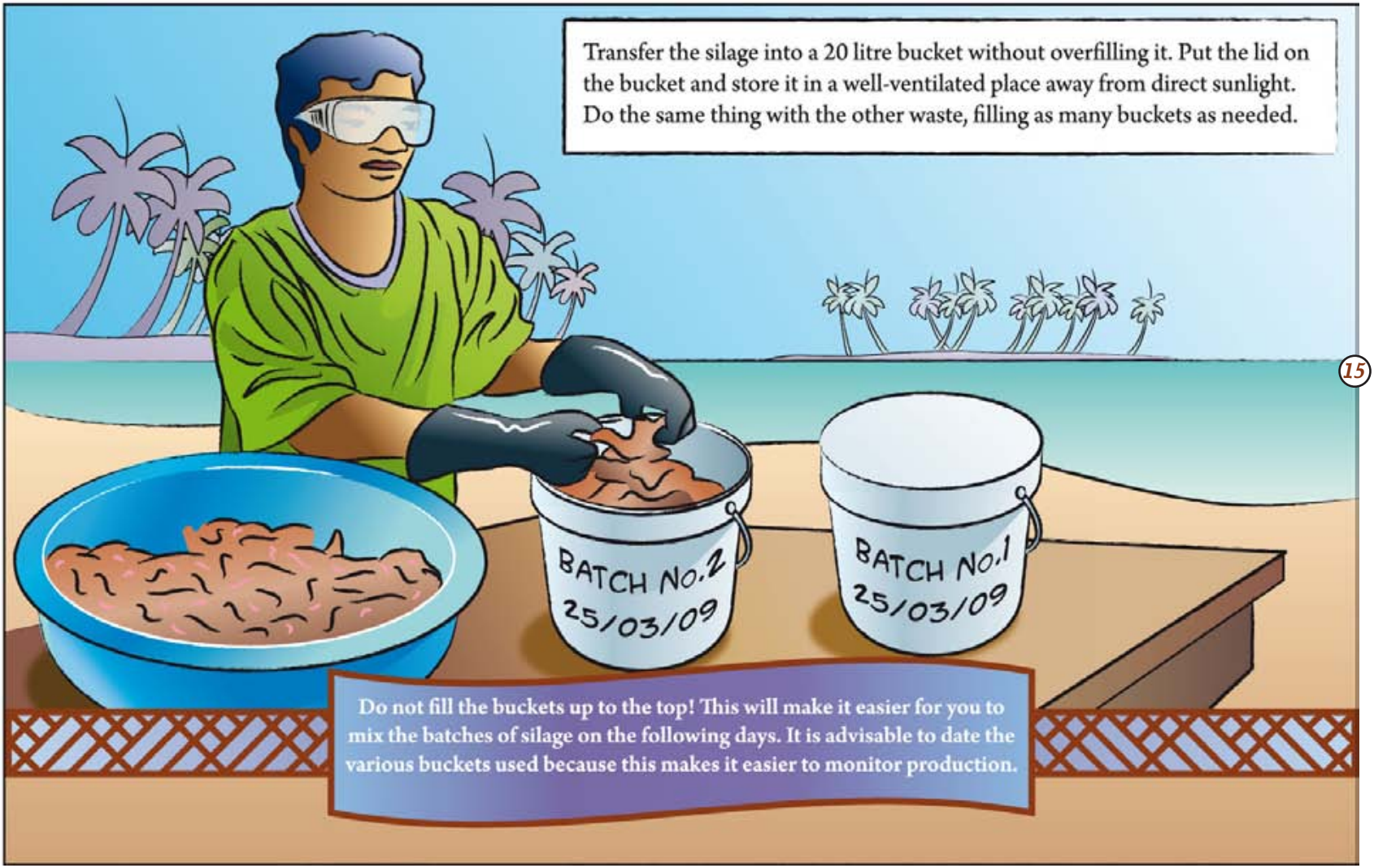
35 ml of formic acid per kilogram of waste

Prepare the amount of acid required for each batch, using the measuring glass. For example, for 16 kg of ground waste, you will need 16 x 35 = 560 ml of formic acid.

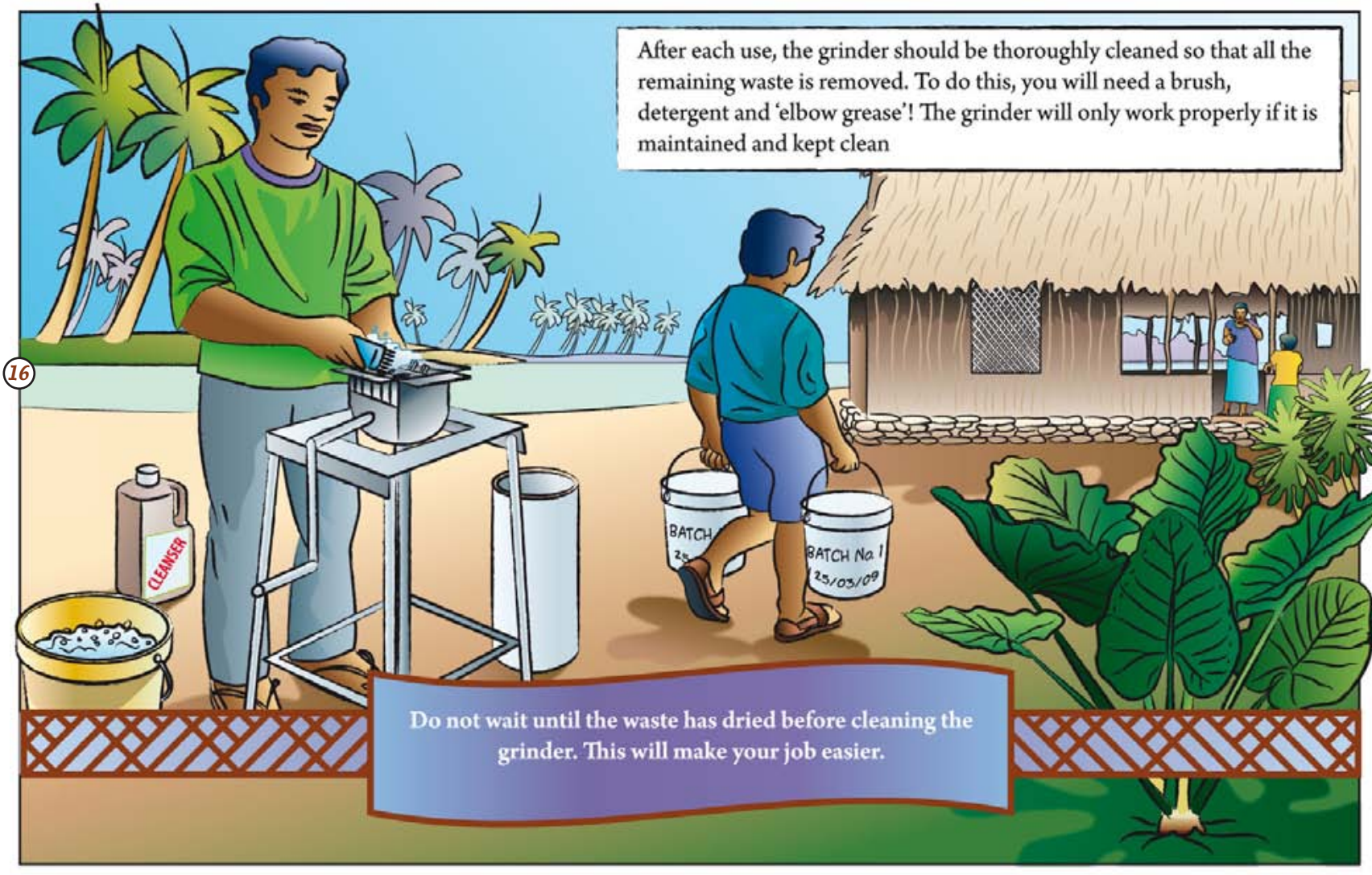
MIXING THE ACID WITH THE WASTE



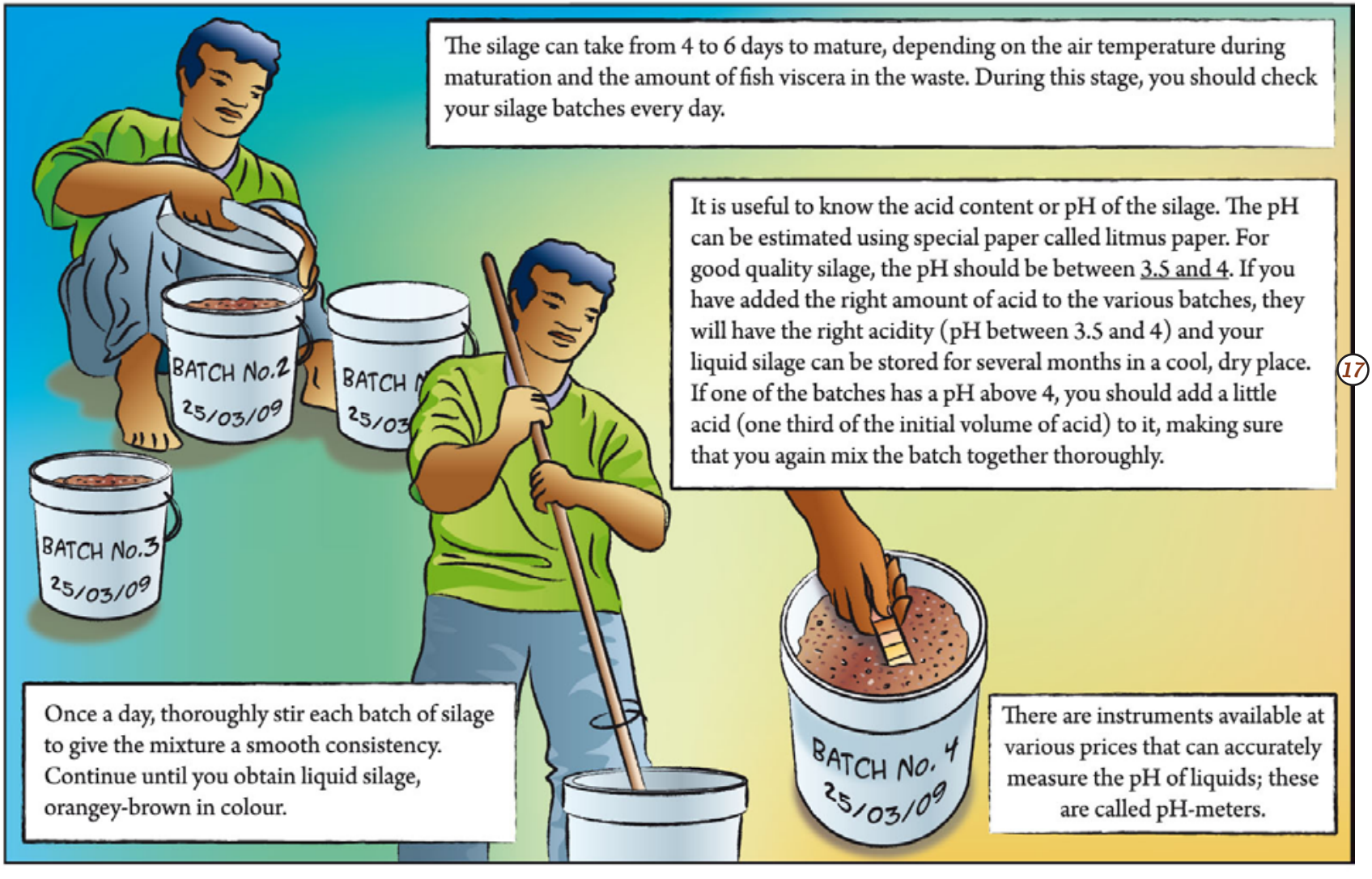
PACKAGING THE BATCHES OF SILAGE



CLEANING THE GRINDER



MATURATION OF THE SILAGE



The silage can take from 4 to 6 days to mature, depending on the air temperature during maturation and the amount of fish viscera in the waste. During this stage, you should check your silage batches every day.

It is useful to know the acid content or pH of the silage. The pH can be estimated using special paper called litmus paper. For good quality silage, the pH should be between 3.5 and 4. If you have added the right amount of acid to the various batches, they will have the right acidity (pH between 3.5 and 4) and your liquid silage can be stored for several months in a cool, dry place. If one of the batches has a pH above 4, you should add a little acid (one third of the initial volume of acid) to it, making sure that you again mix the batch together thoroughly.

Once a day, thoroughly stir each batch of silage to give the mixture a smooth consistency. Continue until you obtain liquid silage, orangey-brown in colour.

There are instruments available at various prices that can accurately measure the pH of liquids; these are called pH-meters.

BOTTLING

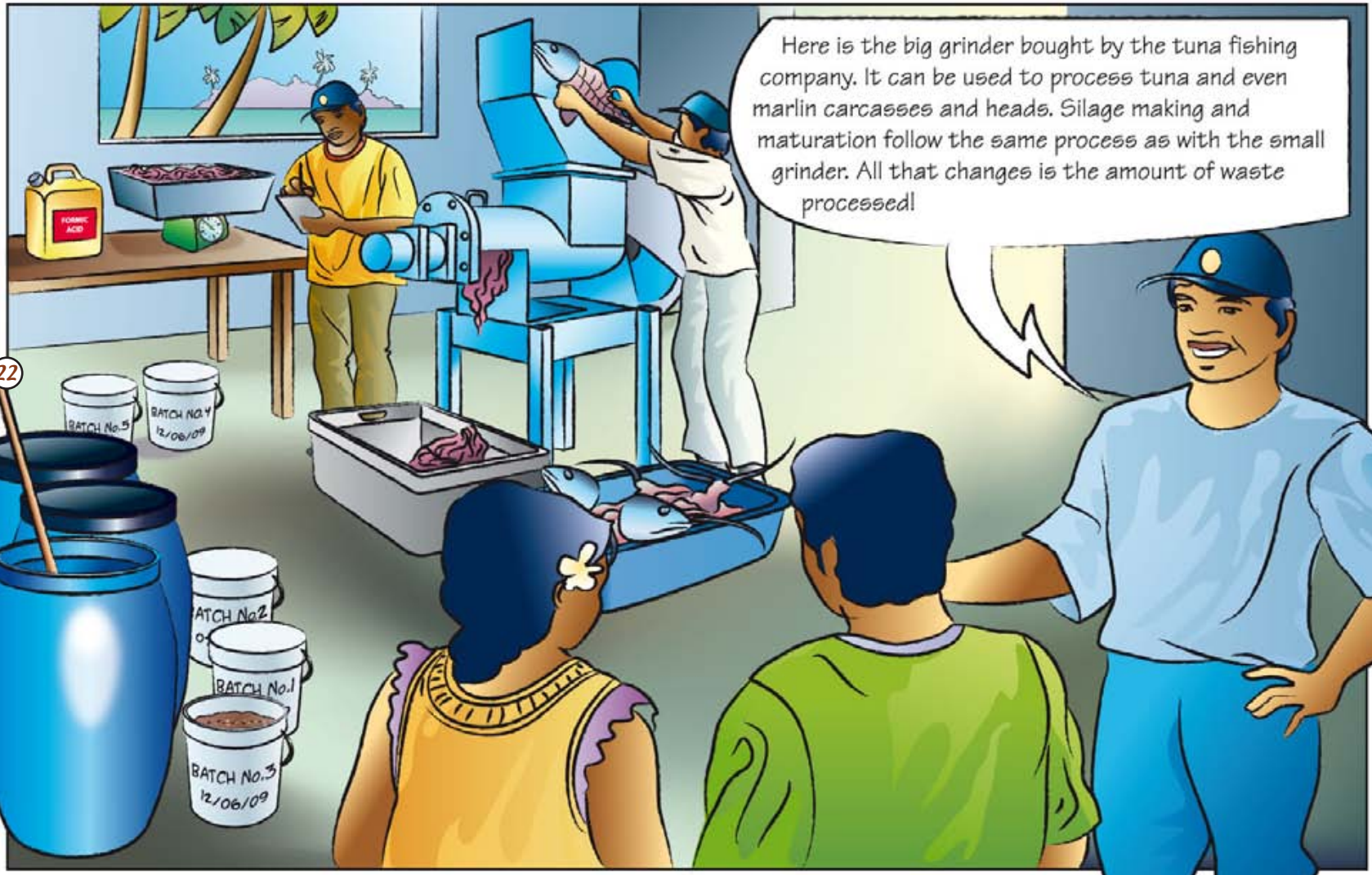

Since we have learnt how to make silage properly, I sell a lot of what we produce at the municipal market. I fill 1 litre bottles of silage and stick on labels saying what it is, how it can be used and the recommended rate of dilution. It sells so well that Glenn and I have had to purchase the Fisheries Department's grinder!
BATCH No.3
25/03/09
Fish Silage
Fish Silage
Fish Silage

USE OF SILAGE AS A ROOT FERTILISER

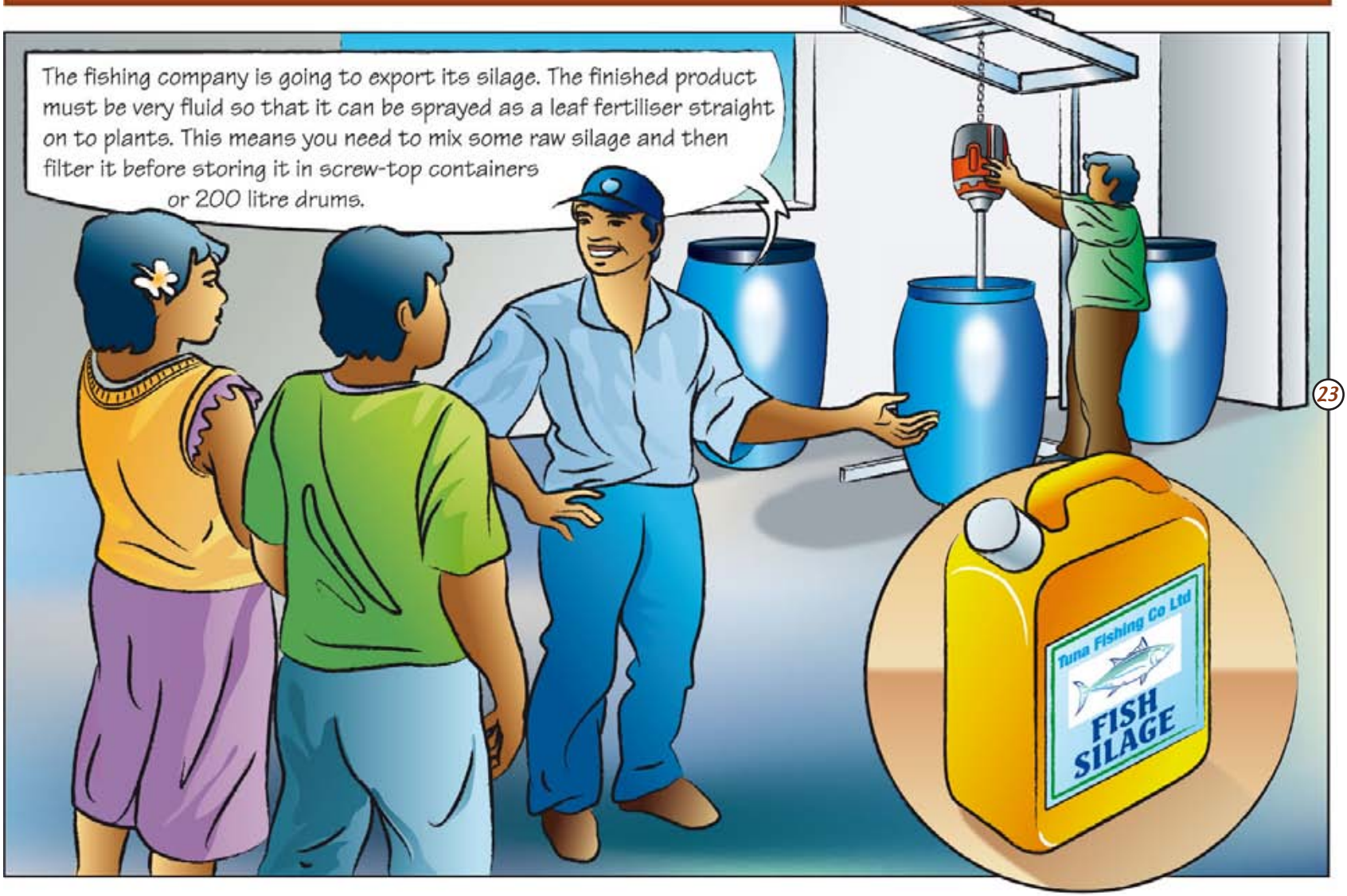
USE OF SILAGE AS A FOOD SUPPLEMENT FOR ANIMALS

LARGE-SCALE PRODUCTION

THE ELECTRIC GRINDER



SILAGE AS A LEAF FERTILISER



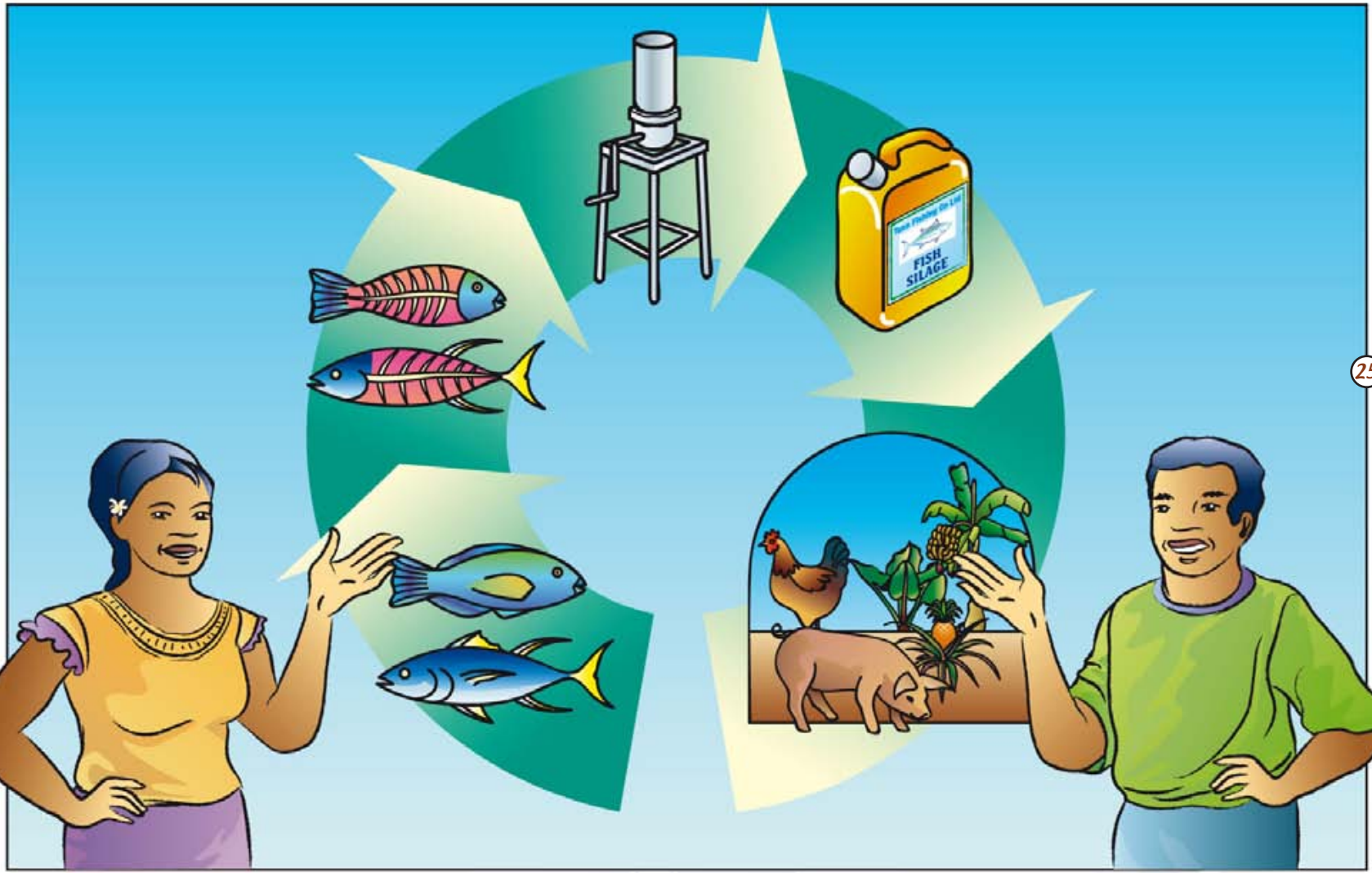
Every year, hundreds of tonnes of fish waste are thrown away in the Pacific Islands. This waste is often disposed of in rubbish dumps, where it attracts flies, rats and other pests that can carry diseases and contaminate water. As we have just seen, fish waste can easily be processed into liquid fish silage. The potential for fish silage production in the Pacific is therefore very high.

Fish silage offers many benefits:

- It contributes to a more sustainable use of increasingly scarce fishery resources and adds value to them.
- It helps reduce costly imports of chemical fertilisers.
- It is a low-cost solution for improving the poor soils of coral atolls.
- The process used to make fish silage is environmentally friendly, as the only chemical required is a small quantity of organic acid.

- Fish silage production does not require highly qualified people. It can therefore be made in most of the island communities of the Pacific. It can also offer women a new income-generating activity.
- Producing fish silage on varying scales offers a good economic development opportunity to many different fishers, including those working in the longline fishing industry.

Fish silage is an easy way of improving food security and the quality of daily life for Pacific Island communities.


FISH
SILAGE

FOR MORE INFORMATION

For further information on the production of fish silage, you can visit the SPC website:

http://www.spc.int/coastfish/news/Fish_News/126/McNeil_126.pdf

Or contact the SPC Nearshore Fisheries Development and Training Section:

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