3.1 Staples around the world

Knowledge and understanding • Geographical skills

logical–mathematical • interpersonal

Each day billions of people who have access to food will almost always have some form of staple as the main part of their diet. This varies around the world. The familiar staples are rice and other grains, such as wheat, that can be made into bread.

1 Complete the table below, writing where the following staples are eaten. You may need to research your answers.

Staples eaten around the world

Name of staple	Country/Countries where it is eaten
White rice	
Oca	
Taro	
Millet	
Ulloco (or ulluco)	
Cassava	
Wheat	
Kidney beans	
Sweet potato	
Sorghum	
Edamame	
Quinoa	
Japanese yam	
Plantains	

2 a How many of these foods have you eaten? _____

b Describe the texture and taste of a staple you know to someone who has never tried it.

_____

_____

3 Do some research to find out which countries or nationalities eat which type of bread and complete the table below.

Bread types eaten around the world

Type of bread	Country of origin
Injera	
Pita bread	
Baguette	
Chapatti	
Damper	
Cornbread	
Tiger bread	
Yufka	
Lavash	
Ciabatta	
Rice bread	
Taftan	

4 a Which of these breads have you tried?

_____

b What have you eaten it with?

_____

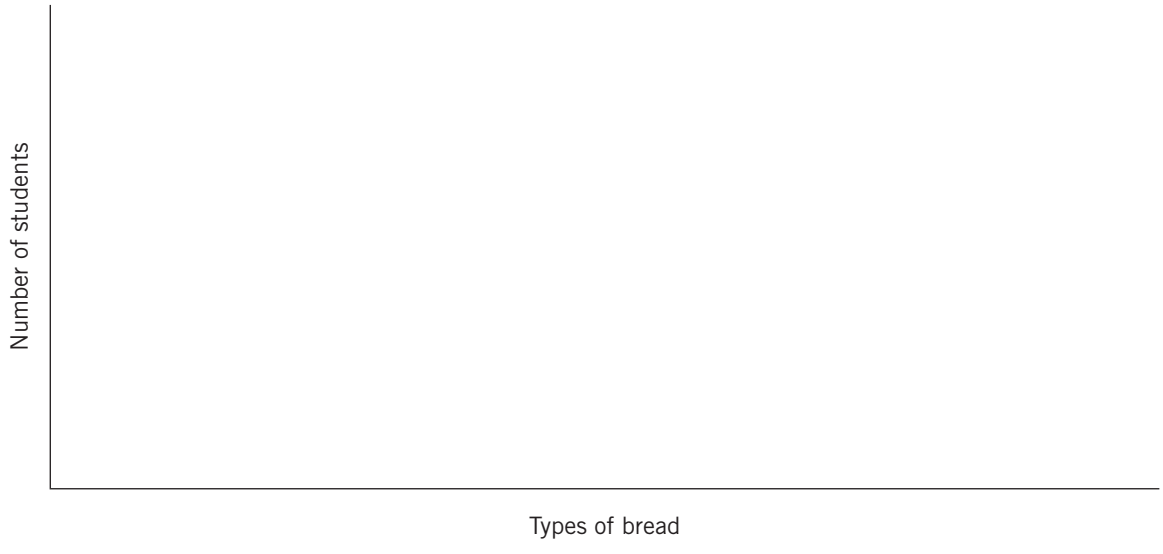
c Which would you like to try? Why?

_____

d Which would you *not* like to try? Why?

_____

5 Develop a class survey of the types of bread your class has tried and create a bar graph in the space below.



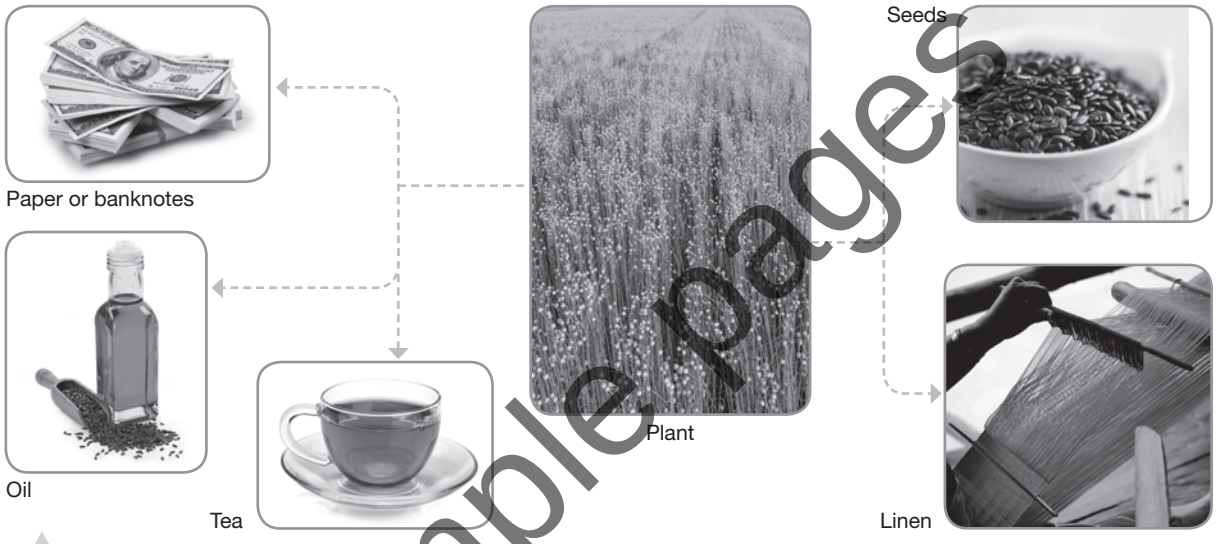
3.2 Case study: Flax

Knowledge and understanding • Geographical skills

logical–mathematical • visual–spatial

There are many plants grown around the world that produce fibres which humans have been able to fashion into coverings for themselves and furnishings for their houses. The most commonly used fibre is cotton, but there are less well-known types of fibre. Flax is one of these fibres.

Flax, also known as 'linseed', is grown in cooler regions of the world. The flax fibres are used in the production of cloth called 'linen', and the seeds produce oil when crushed. This oil is used in paints and varnishes for protecting and nourishing furniture.



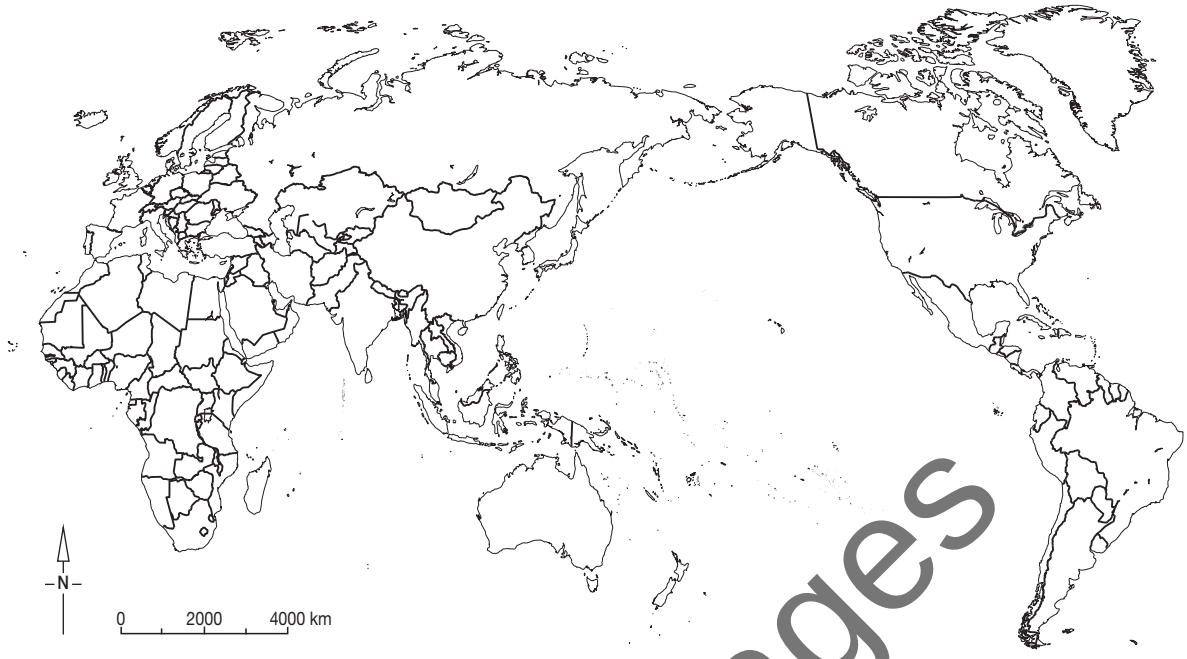
3.2.1 Products made from flax

Top ten flax (linseed) producers, 2011

Country	Production (metric tonnes)
Canada	368 300
China	350 000
Russia	230 000
India	147 000
United Kingdom	71 000
United States	70 890
Ethiopia	65 420
Kazakhstan	64 000
Ukraine	51 100
Argentina	32 170
Other	152 167
World	**1 602 047**

Source: FAOSTAT, 2012

1 Mark the major flax-producing countries on the world map.



3.2.2 Map of major flax producers

2 Describe the pattern of growing flax around the world.

3 Based on the map in your Student Book, which major biomes are spatially associated with the growing of flax?

4 Using the list of biomes in question 3, name additional countries that could be associated with the growing of flax.

3.3 Case study: Sisal, a natural fibre

Knowledge and understanding • Geographical skills

visual–spatial • logical–mathematical

3.3.1 Sisal plantation near Mombasa in Kenya

Sisal production

There are fluctuations in the market as well as changes in fashion over the use of natural versus synthetic fibres, but it is very hard to compete with cotton's versatility. There are, however, other fibres that have an important role to fill, such as sisal.

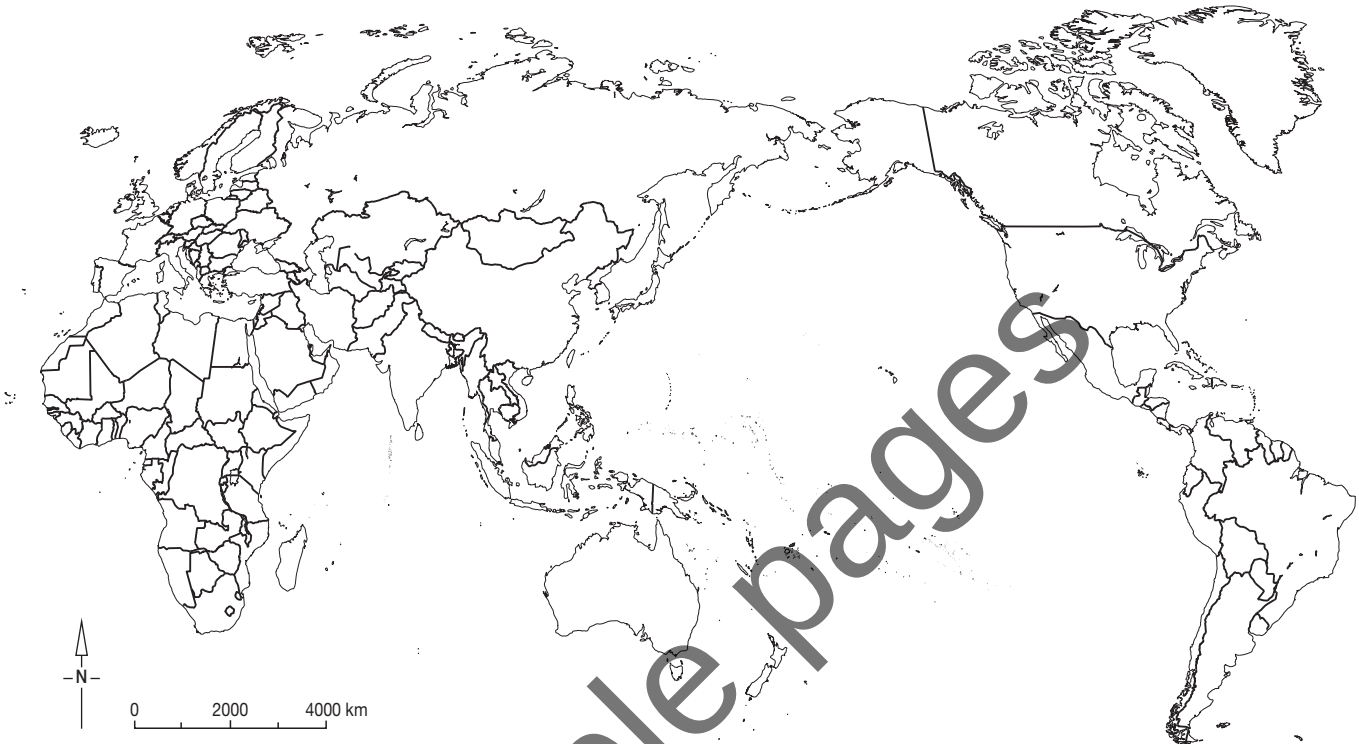
Sisal is a plant that originated in Mexico, but is now found growing in Kenya, Tanzania, Madagascar, China and Brazil. Smaller quantities are grown in Haiti and South Africa. It is a very hardy plant that is able to grow in semi-arid areas, which makes it ideally suited to low rainfall regions; it can withstand extended periods of drought. The leaves of the plant grow to over a metre in length and produce a creamy white, very strong fibre. This fibre is extracted from the leaves of the plant as soon as it is cut and run through a machine, which removes the pulpy part of the leaf by a process called 'decortication'. The fibres remain and these are washed then placed in the sun for 24 hours to dry out. They are then graded and eventually bailed for export.

The main use of sisal was for baler twine, a cheap type of rope. This use reached its peak in the 1970s. There was a decline as cheaper synthetic ropes were being produced and the demand for sisal rope fell away.

In more recent years the uses of sisal fibre have diversified: it is now used as a replacement for glass fibres and the strengthening of plastics; it is also being used in various components in the automobile industry and in commercial aircraft; it is widely planted in large numbers for land reclamation schemes and stabilisation of slopes in road construction. There are also other applications in plaster reinforcement in residential construction in certain parts of the world. Sisal padding is also used for mattresses and domestic furniture, and for dartboards.

Sisal has a great future, not only because of its new uses, but also because of the growing public awareness that natural fibres, such as sisal, are environmentally friendly. They require minimal maintenance, little fertiliser and pesticides, and minimum amounts of water. This makes sisal the perfect plant for countries such as Kenya.

1 Identify the countries mentioned in the case study by shading them on the blank world map below. Add an appropriate title to your map.



3.3.2 Map of the world

2 Select a location from one of the countries in the case study and research climate statistics (using an atlas or online weather and climate site). Mark your answers on the world map.

3 Do these climate graphs support or reject the suggestion that sisal needs a semi-arid environment to grow? Explain your findings.

4 What can sisal be used for once the fibre is extracted?

5 What types of material would compete with the natural fibre production?

Year	Amount in tons (approximate)
2002	20000
2003	25000
2004	27000
2005	25000
2006	25000
2007	24000
2008	22000
2009	18000
2010	22000
2011	24000
2012	30000

Source: The London Sisal Association, 2013

3.3.3 Kenya sisal fibre production, 2002–12

6 a In the space below, draw a line graph using the statistics in Table 3.3.3.

b Describe the trend in the production of sisal in Kenya over the 11-year period.

c Give two possible reasons for changes in the production levels of sisal.

3.4 Agricultural production

Knowledge and understanding • Geographical skills

mi visual–spatial • verbal–linguistic

To increase local food production, crowded Singapore goes vertical

Every night around midnight hundreds of trucks enter Singapore from Malaysia and beyond to unload their cargoes of imported fruit and vegetables at the sprawling Pasir Panjang wholesale center. …

It's a window into the complex daily supply chain of fresh food in a country that grows only 7 per cent of its produce. …

In Singapore, there's a new paradigm rising on a 9-acre industrial plot on the city's urban fringe, where 50-year-old entrepreneur Jack Ng is building a series of what look like giant shrink-wrapped boxes nearly four stories tall.

Walk inside the transparent structures and you enter one of the most efficient food production systems on the planet, called SkyGreens.

Inside, hundreds of 30-foot tall [9 metres] aluminum A-frames structures are stacked to the ceiling with tiers of lettuce and Chinese cabbage arranged in a circle, each rotating like a Ferris wheel. It's a technology Ng invented, and it's built around what he calls his 'water wheel'. …

'The electricity we use, it's three dollars per month for this whole tower,' Ng says, about the equivalent of running one 60-watt light bulb. The turbine rotates each tower's 38 tiers of plants, ensuring equal exposure to the sunlight above and a micro sprinkler system below. All the water is filtered and reused. The greens are grown without chemical inputs, in organic soil composted from food waste. …

Each of the A-frames costs around 12-thousand dollars to build, but their small footprint makes them up to ten times more productive per square foot than conventional farming. And in a country with the third densest population on the planet and some of the world's highest land values, that cost to productivity ratio is key to SkyGreens' early success. …

At the supermarkets where many of those imports end up, SkyGreens produce sells for only about 10 per cent more than greens from Malaysia and China. …

But the price will only fall as the technology advances, says Columbia University ecologist Dickson Despommier. …

Which would enable urban farming to move into vacant office towers and repurposed factories, since energy costs and sunlight would no longer be limiting factors. …

Jack Ng claims his rotating vertical farming system could increase Singapore's locally grown produce by a factor of seven. All while using only a fraction of the land and water used in conventional agriculture, and about a quarter of the labor and materials. And then there's the reduced carbon footprint of food that doesn't require massive fossil fuel inputs.

But just as important—to his customers, at least—Ng says his greens taste better. And they do. …

With some foreign produce taking weeks to reach Singapore's shelves, Ng says that 'day of' freshness is driving demand for his product.

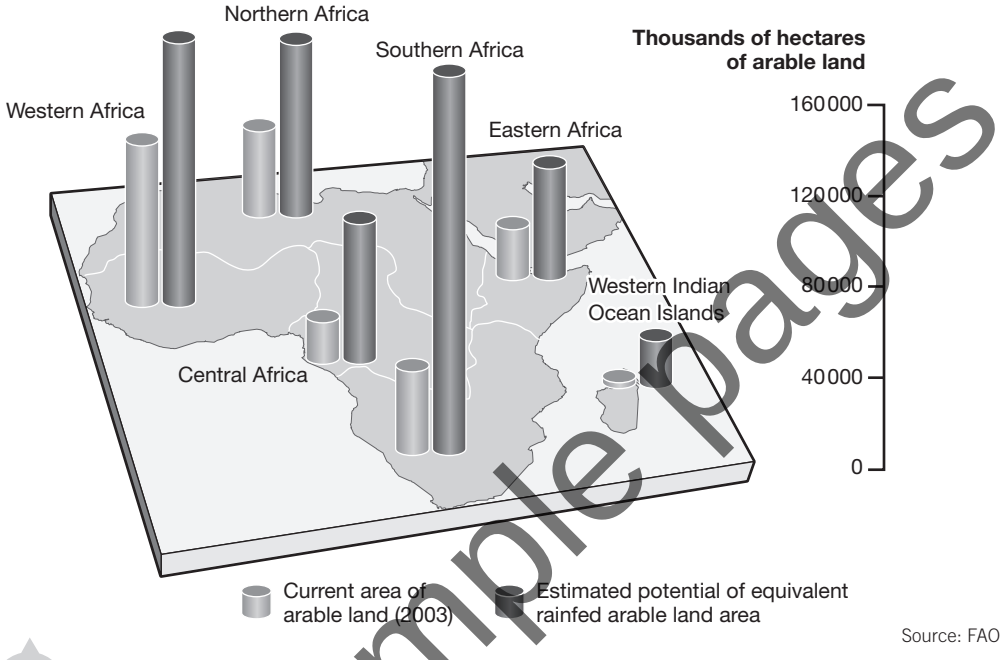
…

Source: Sam Eaton, 'What's for lunch?' series, Public Radio International, 31 July 2013

Read the extract and answer questions 1 and 2.

1 Outline the problems Singapore faces in producing its own food.

2 Explain how technology is being used to produce food in Singapore.



Source: FAO

3.4.1 Some African nations have a choice to make about how they use their arable land.

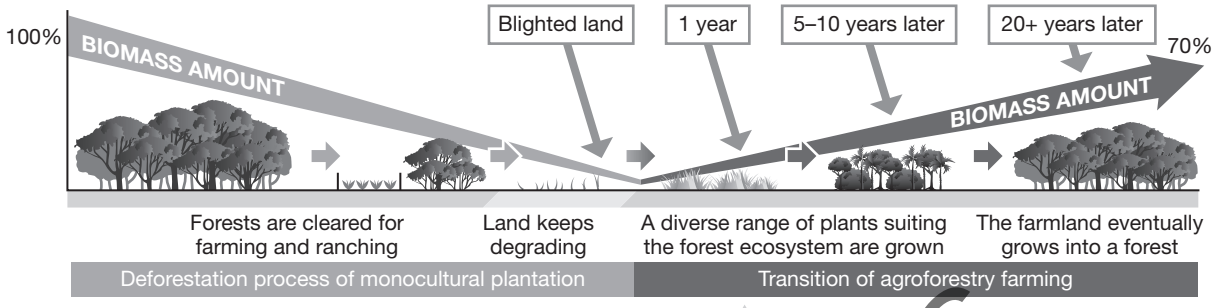
Many countries in Africa are deciding between allocating land for domestic food production or allowing other countries to lease the land for production of their own food. Indeed, some of the crops grown on leased land are for fuel production, rather than food production.

Study Figure 3.4.1 and complete questions 3 and 4.

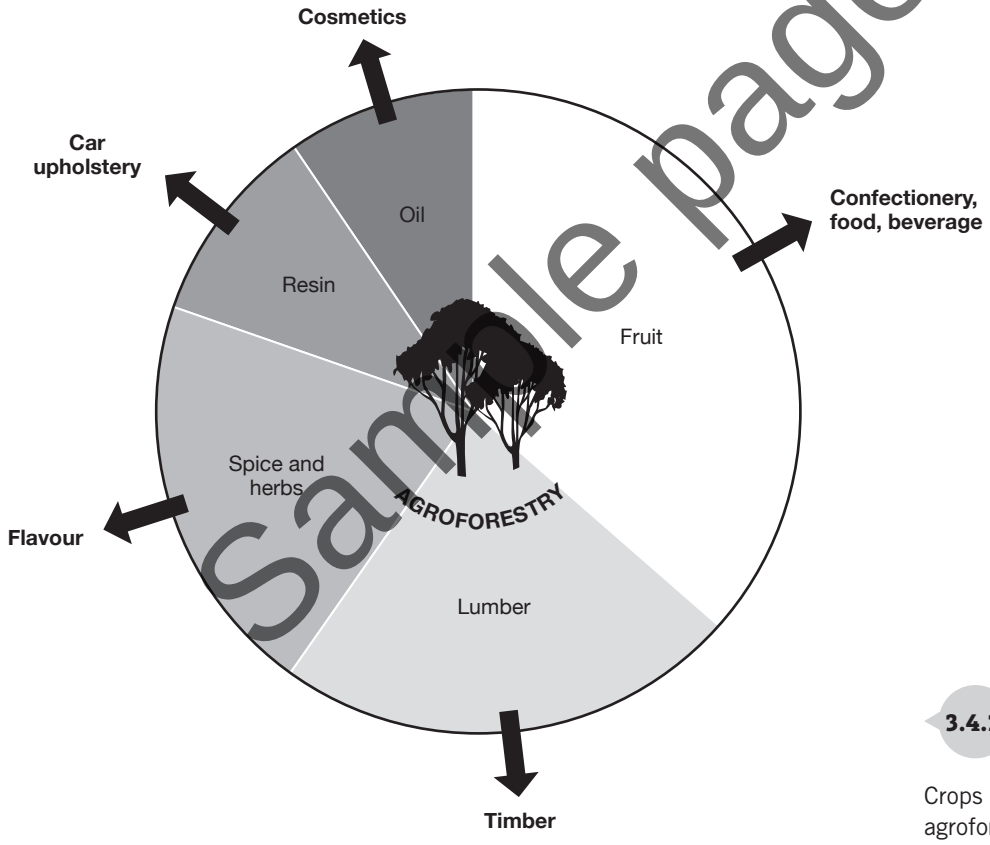
3 Study the options available to Africa and recommend how the land should be used. Provide a justification for your recommendation.

4 What might be some constraints for these African nations?

Tomé-açu is an area in the Amazon settled by Japanese immigrants, and agroforestry has developed as the town has developed. Due to its ability to restore blighted land while conducting sustainable farming, the agroforestry of Tomé-açu is gaining significant international attention, not only for its high absorption of CO_2 and restoration of biodiversity, but also as a means of addressing global issues such as desertification, the food crisis, rural development and poverty. Elsewhere, villagers of a once-tropical forest are struggling to produce enough food on a degraded landscape.

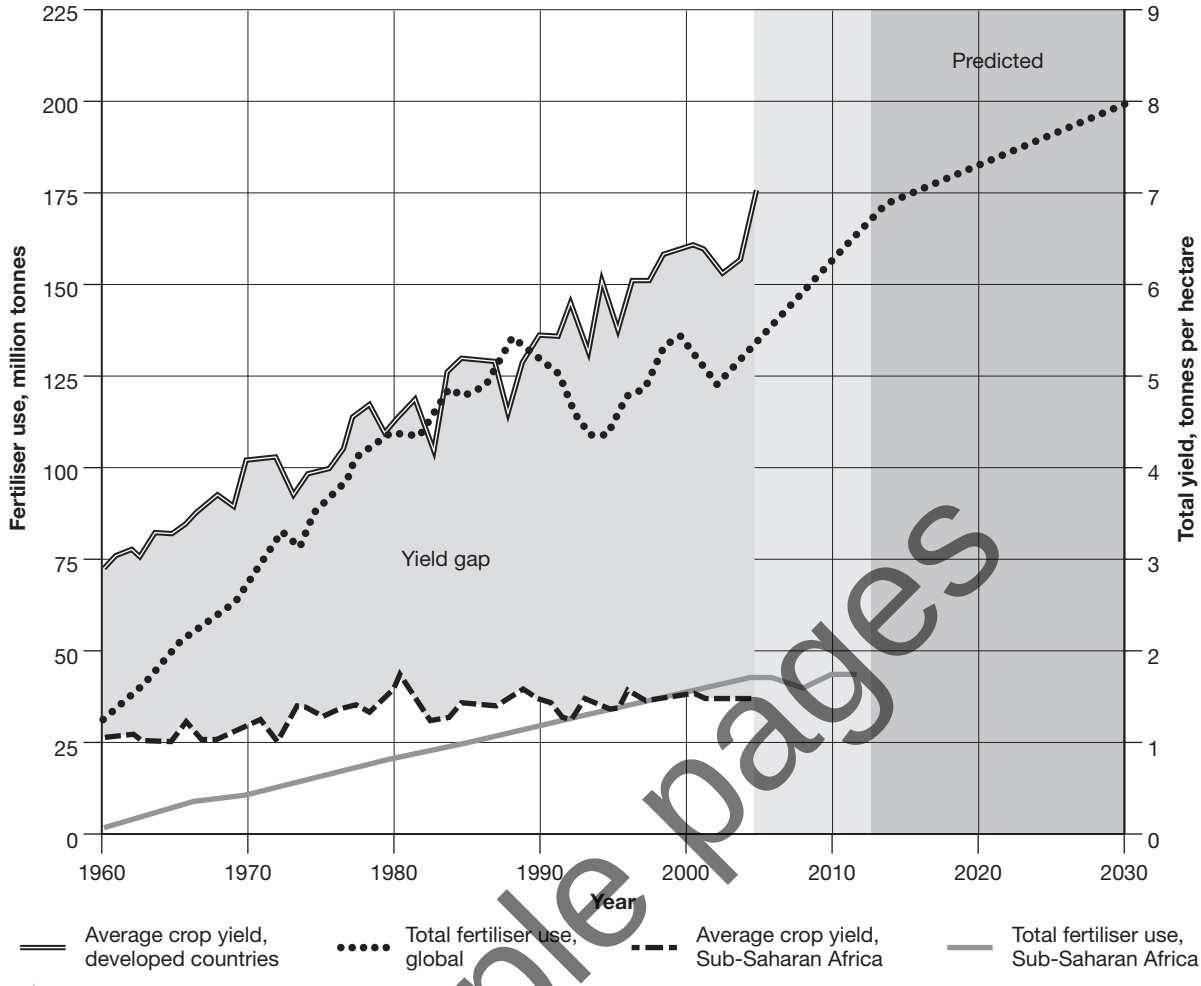


3.4.2 The benefits of agroforestry in Tomé-açu



3.4.3 Crops produced through agroforestry in Tomé-açu

5 Using the principles of agroforestry, explain to villagers in other parts of the Amazon what they could do and how it could help them.



Source: Roots for Growth

3.4.4 Crop yield and fertiliser use in developed and Sub-Saharan African countries

Refer to Figure 3.4.4 to answer questions 6–8.

6 Explain how crop yield has changed in developed countries since 1960.

7 Describe how fertiliser use has changed since 1960 in developed countries and Sub-Saharan Africa.

8 Discuss the relationship between crop yield and fertiliser use.