

LESSON 2: TROPICAL FOOD FROM FARM TO SHOP

Lesson plan overview

In this lesson, students trace tropical food products along the supply chain—from the farms where crops are grown and the factories where they are processed to the supermarkets and cafés where consumers buy the final products. Students will analyze detailed case studies on cocoa, coffee, bananas, and tea, while exploring the environmental impacts of different growing practices. A math tie-in activity will help students to connect numbers to real-world sustainability issues in food systems.

Educational materials

- **Videos:** ‘Regenerative Agriculture in Tropical Rainforest Regions’; ‘Journey of a Cocoa Bean’
- **Worksheet:** Supply Chain Tracker (follow one product, like chocolate, from farm to shelf)
- **Quiz:** Multiple choice and short-answer on concepts like soil health and biodiversity
- **Math tie-in:** Calculating the real cost of chocolate
- **Art tie-in:** Design forest-friendly chocolate packaging
- **Classroom discussion questions:**
 - What makes some types of farming better for the rainforest?
 - How do food choices affect the environment?

WORKSHEET: Supply Chain Tracker

Worksheet



Name: _____ Date: _____

PART 1: TRACE THE PRODUCT

Choose one product to follow:



Step 1: Farm stage

Where is this product grown? (Which counties or regions?)

Who grows it (individual farmers, cooperatives, large plantations)?

Step 2: Processing stage

How is the product prepared before export?

What technologies, labor, or community involvement are used?

Step 3: Transportation and trade

Where does the product go next (export destinations)?



How many steps do you think it takes to reach your table?

Step 4: Retail and consumption

Where do you find this product in your daily life? (store, café, market)

PART 2: IMPACTS ALONG THE SUPPLY CHAIN

For your chosen product, identify environmental and social impacts.

Conventional farming impacts

What might happen to forests, soil, or water?

How might farmers and communities be affected?

Regenerative farming impacts

How could practices like shade-growing, crop rotation, or composting improve outcomes?



How might these practices affect biodiversity, soil health, and farmer well-being?

PART 3: REFLECTION QUESTIONS

What surprised you most about your product's journey?

What makes some farming methods better for rainforest regions than others?

If you could design a certification label (like the Rainforest Alliance's green frog seal), what would it stand for?

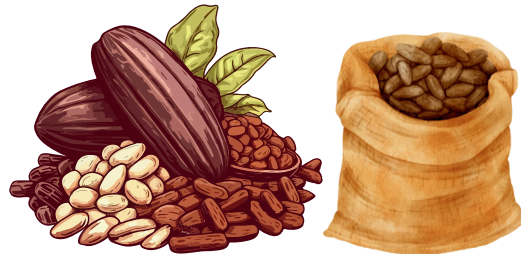
Cocoa (Chocolate)



Cocoa is grown mainly in West Africa, Central and South America, and Southeast Asia. Smallholder farmers produce most of the world's cocoa, often on plots of just a few hectares.



The beans grow in pods on cocoa trees, which thrive under warm, humid conditions. Cocoa farming provides income for millions of families, but farmers often receive very low prices for their crops.



Conventional farming can lead to soil exhaustion and deforestation, while regenerative methods, like shade-grown cocoa, protect biodiversity, improve soil health, and help farmers adapt to climate change.



Cocoa beans are shipped globally and turned into the chocolate products we enjoy.



Coffee



Coffee comes from the beans of the coffee plant, mostly grown in tropical countries like Brazil, Colombia, Ethiopia, and Indonesia. Coffee farming supports more than 25 million families worldwide.



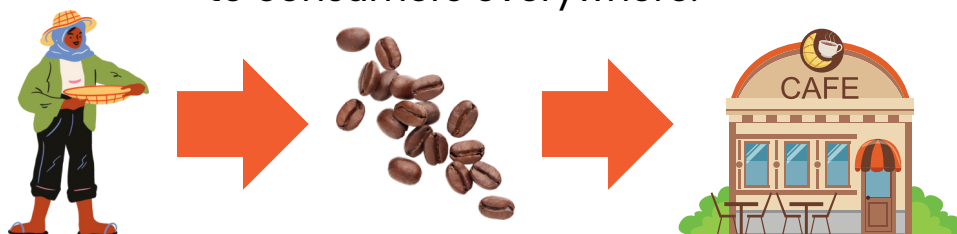
In traditional shade-grown systems, coffee is cultivated under the canopy of taller trees (like avocado trees), which provides homes for birds, reduces soil erosion, and keeps ecosystems healthy.



However, modern large-scale sun-grown coffee farms often replace forests, rely heavily on chemicals, and degrade the land.



Coffee's long supply chain—from farmer to exporter to roaster to shop or café—shows how global demand connects tropical forest regions to consumers everywhere.



Bananas



Bananas are one of the most widely eaten fruits in the world, and many come from Latin American countries like Ecuador, Costa Rica, and Colombia.



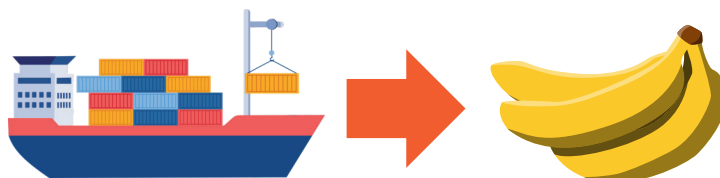
Grown in warm, wet climates, bananas are often cultivated in large monoculture plantations, which can cause soil depletion and require heavy pesticide use.



Workers on these plantations sometimes face poor labor conditions and low wages. However, sustainable banana farms seek to improve social equity and reduce environmental harm by diversifying crops, protecting waterways, and promoting worker rights.



Bananas travel long distances in refrigerated ships before reaching supermarkets worldwide.



Tea



Tea leaves come from the *Camellia sinensis* plant, which grows best in tropical and subtropical countries such as India, Sri Lanka, and Kenya.



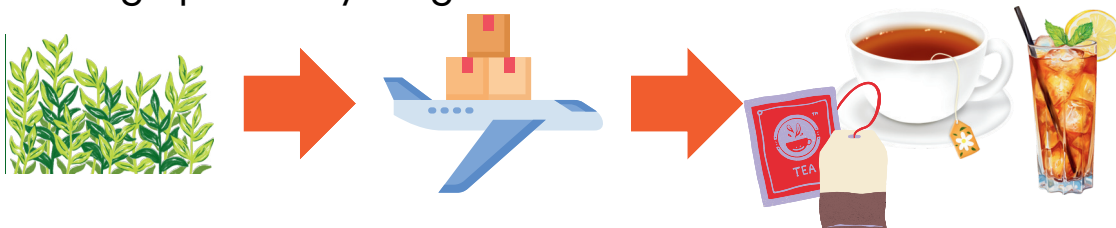
Tea production is labor-intensive, with workers plucking leaves by hand. While tea provides jobs for millions, plantation systems have often been criticized for poor wages and working conditions.



Conventional farming can also degrade soils and rely heavily on chemical pesticides. In contrast, sustainable and regenerative farming practices like agroforestry and Integrative Pest Management reduce chemical use, preserve biodiversity, and support healthier communities.



From the fields, tea is processed, packaged, and shipped globally, ending up in everything from loose leaf to bottled iced teas.



QUIZ: Favorite Foods From Farm to Shop



Name: _____ Date: _____

Part A: Multiple choice

1. Which of the following describes regenerative agriculture?

- a) Farming that maximizes short-term yields using chemical fertilizers
- b) Farming that improves soil health, biodiversity, and waterways
- c) Farming that relies on large monocultures and deforestation
- d) Farming that only grows food for export

2. Shade-grown coffee is beneficial because:

- a) It ripens faster in direct sunlight
- b) It reduces biodiversity in the rainforest
- c) It provides habitats for birds and reduces soil erosion
- d) It eliminates the need for harvesting

3. Cocoa farming is a challenge for smallholder farmers because:

- a) They often earn very high profits
- b) Prices for cocoa are unstable and often too low
- c) Cocoa is not a crop grown in rainforest regions
- d) It is mainly produced on large industrial farms

4. Which product is usually transported in refrigerated ships to reach global markets?

- a) Tea
- b) Bananas
- c) Cocoa
- d) Coffee

5. What is one major environmental problem with large banana plantations?

- a) They encourage crop diversity
- b) They require heavy pesticide use and deplete soils
- c) They are always grown in shade systems
- d) They cannot be exported internationally

Part B: Definitions



6. Define supply chain in your own words.

7. What do worker rights mean, and why are they important?

8. What is the main difference between conventional farming and regenerative farming?

Part C: Scenarios

9. A chocolate company sources cocoa from a farm that plants shade trees, rotates crops, and protects waterways like rivers and streams. Which farming approach is this an example of?

10. A tea plantation clears a large section of forest, uses chemical fertilizers, and sells cheap tea globally. What might be two consequences of this practice for both the environment and workers?

QUIZ: Favorite Foods from Farm to Shop



Part A: Multiple choice

1. b) Farming that improves soil health, biodiversity, and waterways

Explanation: Regenerative agriculture restores ecosystems instead of destroying them.

2. c) It provides habitats for birds and reduces soil erosion

Explanation: Shade-grown coffee protects forests and keeps soils stable.

3. b) Prices for cocoa are unstable and often too low

Explanation: Smallholder farmers often struggle to make a living wage due to fluctuating cocoa prices.

4. b) Bananas

Explanation: Bananas spoil quickly and require refrigeration when shipped overseas.

5. b) They require heavy pesticide use and deplete soils

Explanation: Conventional banana plantations can damage ecosystems and harm the health of workers.

Part B: Definitions

6. Supply chain

Answer. The steps a product goes through from being grown/produced, processed, transported, and sold to consumers.

7. Worker rights

Answer. A system that ensures farmers and workers are paid fairly, work under safe conditions, and that farming practices are healthy.

8. Conventional vs. regenerative farming

Answer. Conventional farming often depletes soil and relies on chemicals; regenerative farming restores soil health, increases biodiversity, and protects water.

QUIZ: Favorite Foods from Farm to Shop



Part C: Scenarios

9. A chocolate company using shade trees, crop rotation, and protecting waterways like rivers and streams.

Answer. This is regenerative farming.

10. A tea plantation clearing forests and using chemicals

Answer. Environmental consequence = Loss of biodiversity, soil erosion, and water pollution.

Worker consequence = Poor working conditions, health risks from pesticides, and unfair wages.

MATH TIE-IN



The Real Cost of Chocolate

Students will calculate and compare the difference between cocoa farming in a season of good harvest versus poor harvest.

(Disclaimer: These are fictional numbers for the purpose of this exercise and do not reflect actual earnings of farmers.)

In a good harvest (following optimal weather conditions throughout a growing season) a cocoa farmer earns: **\$2.00 per day**



In a poor harvest (with crop losses due to bad weather), a cocoa farmer earns **\$0.90 per day.**

Average bar of chocolate sells for: **\$2.50**



A small farmer produces enough cocoa beans for 5,000 bars of chocolate per year

Tasks for students:

- Calculate the farmer's annual earnings in both good and poor harvests.
- Determine what percent of the chocolate's price actually goes to the farmer in each scenario.
- Create a bar graph showing farmer income in both good and poor harvests.

Learning goal:

Students practice percentages, multiplication, and graphing while connecting numbers to real-world equity and sustainability issues in food systems.

MATH TIE-IN (FOR TEACHERS)



The Real Cost of Chocolate

Given data:

In a poor harvest, a cocoa farmer earns: \$0.90/day

In a good harvest, cocoa farmer earns: \$2.00/day

Chocolate bar sells for: \$2.50

Farmer produces enough beans for 5,000 bars/year

Step 1: Annual earnings

Poor harvest: $\$0.90 \times 365 = \$328.50/\text{year}$

Good harvest: $\$2.00 \times 365 = \$730/\text{year}$

Step 2: Total revenue from chocolate bars

$5,000 \text{ bars} \times \$2.50 = \$12,500$ total sales revenue

Step 3: Percent of chocolate price going to farmer

Poor harvest :

$$\$328.50 \div \$12,500 \times 100 = 2.63\%$$

Good harvest:

$$\$730 \div \$12,500 \times 100 = 5.84\%$$

Teacher talking point:

This shows students how tiny the farmer's share of the chocolate price really is—and why seasonal conditions matter for farmers.

ART TIE-IN



Design “Forest-friendly Chocolate” Packaging

Students will design packaging for a sustainable chocolate product and a marketing pitch that highlights forest-friendly farming.

Instructions:

- Create a package design (front and back) for a chocolate bar.
- Incorporate symbols of biodiversity, tropical forests, and cultural heritage (example: tropical forest animals, shade trees).
- Include marketing messages such as:
 - “Grown with Regenerative Agriculture”
 - “Supports Forest Communities”
 - “Better for People and Planet”

Students can work individually or in groups and present their packaging and short pitch to the class.

Learning goal:

Students use creativity and communication skills to connect art and marketing with sustainable agriculture, reinforcing how consumer choices influence the environment.

Inspiration

