Farming's Ripple Effects

Trace how farm choices affect land, water, and daily life.

WG.C.5.3 "Examine the impact of agricultural practices (e.g., irrigation, levees, terraced farming, crop rotation, conservation, and deforestation) on the environment and quality of life."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle each farming practice, underline an environmental effect of each practice, and write B or C beside at least two statements showing a benefit or cost to people's quality of life.

Choices Along the River

1. Along the lower Mississippi River, fields can yield abundant crops, but a farm's choices can also change the water and land nearby. Some growers pump groundwater to irrigate during dry weeks. Water reaching crops can protect harvests and farm income, helping families afford food and other needs. Yet pumping faster than rainfall refills an aquifer can lower its water level. Nearby households and farms may then have to drill deeper wells or pay more to pump water. Irrigation improves life in the short term only if the shared water supply remains usable.

2. River levees can keep floodwater off fields and houses, reducing ruined crops and dangerous evacuations. However, walls that confine a river can push floodwater higher toward places with less protection. They also block floods that once spread fresh sediment across fields. A farmer might use crop rotation as another kind of protection: planting soybeans before corn can interrupt some pest cycles and reduce nitrogen fertilizer needed by the following corn crop. Less fertilizer can mean less nutrient runoff into streams, while a steadier harvest can support farm income.

3. Clearing trees along the river makes room for more crops and may raise a farm's immediate income. But roots no longer hold as much soil, and rain can carry loose soil and farm chemicals into the water. Muddy water can harm fish habitat and make treatment more costly for towns downstream. Keeping a strip of trees between fields and the river uses land that could grow crops, yet the strip can slow runoff and trap some sediment and nutrients. The choice is not simply farms or nature. It is about which costs a community accepts now and later.

2 ANSWER WITH EVIDENCE

Use the passage

1. How can groundwater irrigation both help farm families and create a later cost for nearby households?

2. Why might a levee improve safety in one place while increasing flood risk in another?

3. How can planting soybeans before corn affect both stream water and a farmer's income?

4. Compare clearing riverside trees with keeping a tree strip. What does each choice mean for the farm and for people downstream?

3 YOUR TURN

Your own words

Imagine a town with farms beside a stream, dry summers, and heavy rain that sometimes floods homes. In one paragraph, propose two farming choices from the passage and explain an environmental effect and a quality-of-life effect of each, including at least one tradeoff.

ANSWER KEY

Farming's Ripple Effects

PART 1 · READ AND MARK

Circle each farming practice, underline an environmental effect of each practice, and write B or C beside at least two statements showing a benefit or cost to people's quality of life. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How can groundwater irrigation both help farm families and create a later cost for nearby households?	**It protects harvests and income during dry weeks, but pumping faster than the aquifer refills can lower water levels. Households may need deeper wells or pay more to pump.**
2	Why might a levee improve safety in one place while increasing flood risk in another?	**A levee keeps floodwater off nearby fields and houses, but confining the river can push water higher toward less protected places.**
3	How can planting soybeans before corn affect both stream water and a farmer's income?	**The rotation can reduce fertilizer needed by the corn crop, leading to less nutrient runoff into streams. Interrupting some pest cycles can help support a steadier harvest and farm income.**
4	Compare clearing riverside trees with keeping a tree strip. What does each choice mean for the farm and for people downstream?	**Clearing trees creates more cropland and may raise immediate income, but runoff can make downstream water muddier and more costly to treat. A tree strip takes up cropland but can trap sediment and nutrients before they reach the river.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would keep a strip of trees beside the town's stream and use groundwater for irrigation only when dry weather threatens crops. The trees could trap some soil and nutrients during heavy rain, helping keep the water cleaner for people downstream. The tradeoff is that the tree strip takes land out of crop production. Irrigation could protect harvests and farm income in summer. Limiting pumping would help keep the aquifer usable for households, although farmers might still lose some crops during a long drought.

Accept other passage-based cause-and-effect explanations that accurately connect a practice to environmental change and quality of life. For Part 3, look for two choices applied to the new town and a plausible tradeoff.