

Exercise walk-through

Impacts of Agricultural Practices ■ 5.4

eXercise

You must be able to

- describe impacts of **tilling** 耕作, fertilizer, and confined animal feeding
- link practices to erosion, runoff, and pollution
- suggest mitigation

Method — Tilling

Tilling (plowing) loosens soil for planting but **exposes** it to wind and water, increasing **erosion** and releasing stored carbon.

Method — Fertilizer and runoff

Fertilizers boost yields but excess washes off as **runoff**, adding nutrients to water and causing **eutrophication**.

Method — Confined animal feeding (CAFOs)

Concentrated livestock operations produce huge amounts of **manure/waste**, which can pollute water with nutrients and pathogens, and release methane.

Method — Mitigation

- **No-till** or reduced tilling to cut erosion.
- **Buffer strips** and precise fertilizer use to cut runoff.
- Proper **manure management**.

Practice 2.1 ■ 1 mark

How does tilling increase erosion?

Solution 2.1

Worked steps

It exposes and loosens the soil, so wind and water remove it more easily **B1**.

Practice 2.2 ■ 1 mark

What water problem does fertilizer runoff cause?

Solution 2.2

Method: Fertilizer and runoff

Worked steps

Eutrophication (nutrient pollution / algal blooms) **B1**.

Practice 2.3 ■ 1 mark

State one way to reduce fertilizer runoff.

Solution 2.3

Worked steps

Any one: buffer strips, precise/reduced fertilizer, no-till **B1**.

Exam-style 3.1 ■ 1 mark

Excess fertilizer washing into a lake most directly causes

- A** erosion
- B** eutrophication
- C** drought
- D** deforestation

Solution 3.1

Method: Fertilizer and runoff

A erosion

B eutrophication



C drought

D deforestation

Worked steps

B — eutrophication.

Exam-style 3.2 ■ 2 marks

A farm tills its soil and applies heavy fertilizer near a river.

- (a) Explain two impacts on the environment.
- (b) Suggest one practice to reduce these impacts.

Solution 3.2

Worked steps

(a) Any two: tilling causes soil erosion; fertilizer runoff causes eutrophication; loss of soil carbon **B1** **B1**. (b) Any one: no-till, buffer strips, reduced fertilizer **B1**.

Exam-style 3.3 ■ 2 marks

Explain why concentrated animal feeding operations (CAFOs) are a water-pollution concern.

Solution 3.3

Method: Confined animal feeding (CAFOs)

Worked steps

They concentrate large amounts of animal waste in one place; if it runs off it adds nutrients and pathogens to water, causing eutrophication and disease risk **M1** **A1**.