

Exercise walk-through

5.4

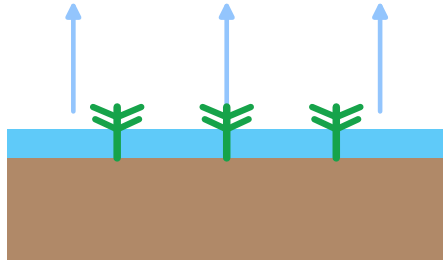
Impacts of Agricultural Practices

AP Environmental Science

Irrigation methods, and what each costs

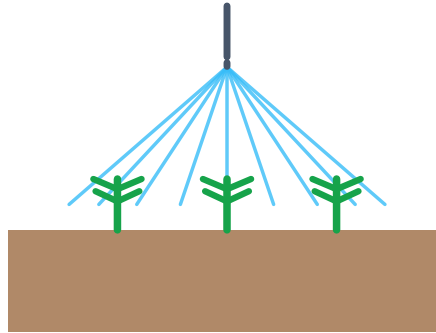
Flood / furrow

much evaporates
& runs off



water efficiency
~50%

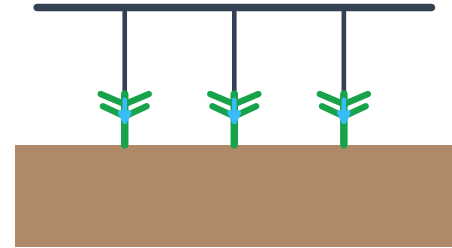
Spray / sprinkler



water efficiency
~70%

Drip

water to the roots



water efficiency
~90%

AP Environmental Science · U5 · three irrigation methods, from low to high water efficiency

Flood irrigation is cheap and wasteful; drip delivers water to the root and wastes least. The trade-off is always **cost against water lost**.

Mining



Benches cut ever wider and deeper to reach the ore

Surface (strip) mining and mountaintop removal disturb the most land. Impacts:

- habitat destruction;
- **acid mine drainage** ;
- toxic tailings polluting water.

When easy deposits run out, mining goes **subsurface** – costlier and more dangerous. Coal follows the same path.

Check yourself

- 1 In the commons, who gets the gain and who pays the cost?
- 2 Which irrigation method wastes the least water?
- 3 What does IPM do before spraying pesticide?
- 4 Name the three pillars of sustainability.



Answers 1. gain to one user, cost shared by all 2. drip 3. monitor pest numbers
4. economic, social, environmental

Exercises 2.1-2.3

2.1 How does tilling increase erosion?

[1]

2.2 What water problem does fertilizer runoff cause?

[1]

2.3 State one way to reduce fertilizer runoff.

[1]

Exercises 2.1-2.3

2.1 How does tilling increase erosion? [1]

2.1

- It exposes and loosens the soil, so wind and water remove it more easily
-

2.2 What water problem does fertilizer runoff cause? [1]

2.2

- Eutrophication (nutrient pollution / algal blooms)
-

2.3 State one way to reduce fertilizer runoff. [1]

2.3

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

Exercise 3.1

3.1 Excess fertilizer washing into a lake most directly causes

[1]

☐

A erosion

B eutrophication

C drought

D deforestation

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3.1 Excess fertilizer washing into a lake most directly causes

[1]

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A erosion

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3.1 B

- eutrophication

Exercise 3.2 (a)

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

(a) Explain two impacts on the environment.

[2]

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

(a) Explain two impacts on the environment.

[2]

(a)

- Any two: tilling causes soil erosion; fertilizer runoff causes eutrophication; loss of soil carbon

Exercise 3.2 (b)

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

(b) Suggest one practice to reduce these impacts.

[1]

Exercise 3.2 (b)

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

(b) Suggest one practice to reduce these impacts.

[1]

(b)

- Any one: no-till, buffer strips, reduced fertilizer

Exercise 3.3

3.3 Explain why concentrated animal feeding operations (CAFOs) are a water-pollution concern. [2]

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3.3

- 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