

Exercise walk-through

5.8

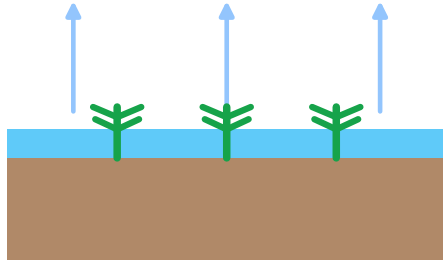
Impacts of Overfishing

AP Environmental Science

Irrigation methods, and what each costs

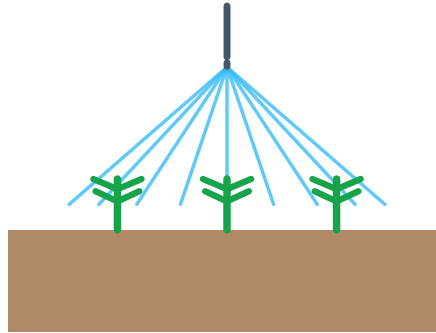
Flood / furrow

much evaporates
& runs off



water efficiency
~50%

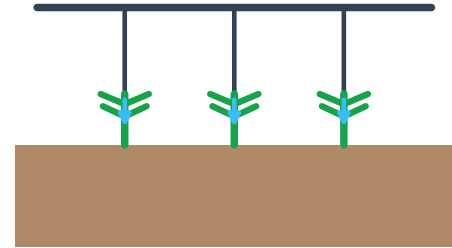
Spray / sprinkler



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**.

Overfishing and aquaculture

Overfishing removes fish faster than they reproduce, collapsing populations – cod is the standing example. **Bycatch** and bottom trawling damage the ecosystem as well as the target stock.

The open ocean is the classic **tragedy of the commons**: no one owns the fish.

Aquaculture eases pressure on wild stocks and is efficient, but it can:

- pollute water with waste and antibiotics;
- spread disease to wild fish;
- destroy habitat – mangroves cleared for shrimp farms.

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.

Exercises 2.1-2.3

2.1 Why does overfishing collapse a fish stock?

[1]

2.2 What is bycatch?

[1]

2.3 State one method to manage a fishery sustainably.

[1]

Exercises 2.1-2.3

2.1 Why does overfishing collapse a fish stock? [1]

2.1

- Fish are caught faster than they can reproduce, so the population shrinks and may not recover

2.2 What is bycatch? [1]

2.2

- Non-target species caught (and often killed) while fishing

2.3 State one method to manage a fishery sustainably. [1]

2.3

- Any one: catch quotas, marine protected areas, selective gear, seasonal closures

Exercise 3.1

3.1 A marine protected area helps fish stocks by

[1]

☐

A allowing unlimited fishing

B banning fishing so populations recover

C removing all fish

D adding pollutants

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3.1 A marine protected area helps fish stocks by

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3.1 B

- banning fishing so populations recover

Exercise 3.2 (a)

3.2 A commercial fishery catches fish faster than they reproduce.

(a) Predict what happens to the fish population.

[1]

Exercise 3.2 (a)

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(a) Predict what happens to the fish population.

[1]

(a)

- It declines and may collapse

Exercise 3.2 (b)

3.2 A commercial fishery catches fish faster than they reproduce.

(b) Explain two ways this could be prevented.

[2]

Exercise 3.2 (b)

3.2 A commercial fishery catches fish faster than they reproduce.

(b) Explain two ways this could be prevented.

[2]

(b)

- Any two: catch quotas, marine protected areas, selective gear, seasonal closures

Exercise 3.3

3.3 Explain why bottom trawling is especially damaging to marine ecosystems. [2]

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3.3

- Dragging nets over the seafloor destroys the habitat and organisms living there, not just the target fish, damaging the whole ecosystem