Land

International Baccalaureate · IB Diploma · Environmental Systems and Societies · HL

Scope and prerequisites

This handout covers selected HL topics for the course first assessed in 2026; it is not the whole syllabus.

Prerequisites: read the stated quantities and units, and use arithmetic and the model conditions below.

The examples are original and fictional: they are not real measurements or real student investigations.

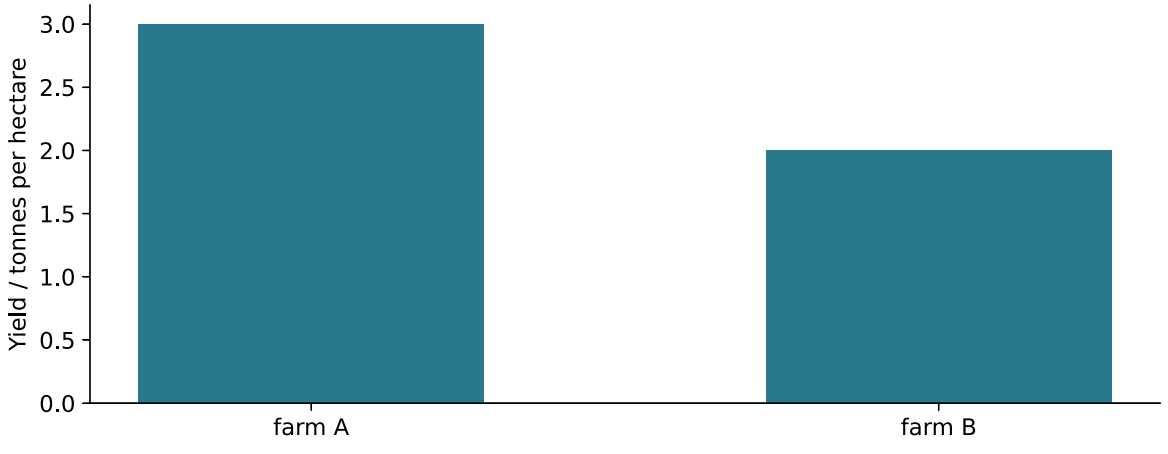
Land, food and resource decisions

What would explain this observation?

- A farm can increase yield while increasing soil loss or water demand. Food-system evaluation requires more than tonnes harvested.

Build the model

- Soil supports nutrient cycling, water storage and organisms.
- **Erosion** removes soil; nutrient depletion changes fertility.
- **Resource** use involves extraction, production, distribution and waste.
- erosion: Removal and transport of soil or rock.
- resource: A material or service used to meet needs.



Compare yield per hectare, not total harvest: 18 t ÷ 6 ha = 3 t/ha against 20 t ÷ 10 ha = 2 t/ha

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Choose evidence that can test it

- Distinguish total yield from yield per area and energy input.
- Sustainable management must consider regeneration rates and impacts beyond the farm boundary.
- Different stakeholders may rank food security, biodiversity and income differently.

In the lab: Compare management options using a stated functional unit and the same timescale. Use approved secondary datasets or non-destructive soil observations. Explain trade-offs instead of claiming a method has no disadvantages.

Work from known quantities

- Known: farm A harvests 18 tonnes from 6 hectares.
- Yield per area = $18/6 = 3$ tonnes per hectare.
- Farm B harvests 20 tonnes from 10 hectares, so its yield is 2 tonnes per hectare despite a larger total harvest.

Your turn: A farm harvests 28 tonnes from 7 hectares. Find yield per hectare.

Check the conclusion and its limits

- A high yield is not proof of long-term soil health.
- Renewable resources can be depleted when use exceeds regeneration.

Not true: A renewable resource cannot be depleted. Renewable means the resource can regenerate, not that it regenerates faster than every possible rate of use. Fish stocks and soils are renewable yet have been depleted when harvest exceeded renewal.

Key:

- Soil supports nutrient cycling, water storage and organisms.
- Distinguish total yield from yield per area and energy input.
- Watch for: A high yield is not proof of long-term soil health.

Write from a yield of 5 tonnes per hectare

- A farm harvests 40 tonnes from 8 hectares.
- Find the yield per hectare. A renewable resource can still be depleted.