AP ENVIRONMENTAL SCIENCE • EXERCISE SHEET

5.3 The Green Revolution

Name: _____ Class: _____ Date: _____ **Total: 11 marks**

Objective

Build the skills to answer exam questions on the **Green Revolution**.

You must be able to:

- describe the **Green Revolution** 绿色革命 and its methods
- state its benefits and costs
- link it to fertilizer, irrigation, and monoculture

1 Worked examples

Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

What it was

The **Green Revolution** greatly increased crop yields using **high-yield seeds**, **synthetic fertilizers**, **pesticides**, **irrigation**, and **mechanization**.

Benefits

It **fed billions** and reduced famine by producing much more food per area.

Costs

- **Soil degradation** and erosion from intensive farming.
- **Water pollution** from fertilizer/pesticide runoff.
- **High energy and water use**.
- Loss of crop diversity through **monoculture** (growing one crop).

Monoculture risk

Monoculture raises efficiency but makes crops vulnerable —a single pest or disease can destroy the whole field, and it depletes specific soil nutrients.

2 Practice

Now apply the methods above.

2.1 Name two methods of the Green Revolution. [2]

2.2 State one benefit of the Green Revolution. [1]

2.3 What is monoculture? [1]

3 Exam-style questions

3.1 A drawback of monoculture is that a single pest or disease can [1]

- **A** improve the harvest
- **B** destroy the entire crop
- **C** increase diversity
- **D** enrich the soil

3.2 A country adopts Green Revolution farming.

(a) State one benefit and one environmental cost. [2]

(b) Explain why fertilizer use can harm nearby waterways. [2]

3.3 Explain why monoculture increases the risk of crop failure. [2]

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **5.3 The Green Revolution** lesson on the **Learn** page;
- read the **The Green Revolution** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Any two: high-yield seeds, synthetic fertilizers, pesticides, irrigation, mechanization.

2.2 It greatly increased food production / reduced famine.

2.3 Growing a single crop over a large area.

3.1 B —destroy the entire crop.

3.2 (a) Benefit: much more food; cost: any one of soil degradation, water pollution, high water/energy use, loss of diversity. (b) Excess fertilizer runs off into water, adding nutrients that cause algal blooms and eutrophication.

3.3 With genetically similar plants over a large area, one pest or disease that can attack it can spread and wipe out the whole crop.