

5.14 Integrated Pest Management

Name: _____ Class: _____ Date: _____

Total: 11 marks

Objective

Build the skills to answer exam questions on **integrated pest management (IPM)**.

You must be able to:

- describe **integrated pest management** 综合虫害治理
- combine biological, mechanical, and limited chemical control
- explain why IPM reduces pesticide problems

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 IPM is

Integrated pest management (IPM) combines several methods to control pests with **minimal pesticide** use, keeping pests below a damaging level rather than eliminating them.

■ The tools

- **Biological** —natural predators.
- **Mechanical/physical** —traps, barriers, hand-removal.
- **Cultural** —crop rotation, resistant varieties.
- **Chemical** —pesticides only as a **last resort**, sparingly.

■ Why it works better

Using less chemical reduces **resistance**, protects non-target species, and lowers pollution —avoiding the pesticide treadmill.

■ A worked example

A farmer rotates crops, releases ladybugs to eat aphids, and only sprays a small amount if pests still exceed a threshold —that is IPM.

2 Practice

Now apply the methods above.

2.1 What is the goal of IPM regarding pesticide use? [1]

2.2 Name two non-chemical IPM methods. [2]

2.3 When are chemicals used in IPM? [1]

3 Exam-style questions

3.1 In IPM, chemical pesticides are used [1]

- **A** first and heavily
- **B** as a last resort, sparingly
- **C** never
- **D** to eliminate every pest

3.2 A farm switches from routine spraying to IPM.

(a) Describe two methods the farm might use. [2]

(b) Explain why IPM reduces pesticide resistance. [2]

3.3 Explain why IPM aims to keep pests below a threshold rather than eliminate them. [2]

4 Go further

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

- work through the **5.14 Integrated Pest Management** lesson on the **Learn** page;
- read the **Integrated Pest Management** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 To minimize pesticide use (use chemicals only as a last resort).

2.2 Any two: biological control, traps/barriers, crop rotation, resistant varieties.

2.3 Only as a last resort, sparingly, when pests exceed a threshold.

3.1 B —as a last resort, sparingly.

3.2 (a) Any two: release natural predators, use traps/barriers, rotate crops, plant resistant varieties. (b) Less pesticide use means less selection pressure on pests, so resistance develops more slowly.

3.3 Eliminating pests entirely is costly and drives resistance; keeping them below a damaging threshold protects the crop while using far fewer chemicals.