BIOLOGY YEAR 12 - MODULE 7 - LESSON 17

Pesticides and Genetic Engineering

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

In the 1950s, screwworm flies were destroying livestock across the southern United States at a cost of hundreds of millions of dollars per year. Scientists solved it not with pesticides but with biology — by releasing 2 billion sterile flies per week until the wild population collapsed. A disease vector was eradicated from a continent using only sterilisation and arithmetic.

- How pesticides are used to control disease vectors
- Why pesticide resistance develops (same evolutionary logic as antibiotic resistance)

2. Success Criteria

By the end, you should be able to:

- How pesticides are used to control disease vectors
- The sterile insect technique (SIT) — mechanism and examples
- How genetic engineering is used in disease control (GM mosquitoes, Bt crops)

3. Key Terms

Researchers
developing genetically modified mosquitoes whose offspring do not survive to adulthood — releasing them into wild popula

And what
the potential benefits? Predict at least two of each before reading

How pesticides
used to control disease vectors

How genetic engineering
used in disease control (GM mosquitoes, Bt crops)

Why SIT
species-specific and less ecologically damaging than broad-spectrum pesticides

Pesticides
chemical substances used to kill or repel organisms that transmit disease

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "How pesticides are used to control disease vectors". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The sterile insect technique (SIT) — mechanism and examples". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Pesticides and Genetic Engineering: "How genetic engineering is used in disease control (GM mosquitoes, Bt crops)".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Pesticides and Genetic Engineering but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Pesticides and Genetic Engineering?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Pesticides and Genetic Engineering?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: How pesticides are used to control disease vectors

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The sterile insect technique (SIT) — mechanism and examples

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: How genetic engineering is used in disease control (GM mosquitoes, Bt crops)

BAND 5 4 MARKS

One thing I still need help with: