GM organisms in production

Teacher / technician

YEAR 11 / LESSON 100 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Original learning tasks; no supplied numerical example represents class measurements.

Coverage and delivery

Shared Biology / Double Award: 5.14–5.16. Insulin production, crops and transgenic organisms.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Student booklets	1 per learner	30
Insulin-production process cards and fermenter diagram	1 set per pair	15 sets
Rulers	1 per pair	15

Immediate safety

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Preparation and delivery

Read alongside the student method

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1. Provide 30 booklets, 15 rulers and 15 sets of insulin-production process cards and fermenter diagram.

2. Keep answers separate until learners have attempted the tasks; discuss the reasons for corrections.

3. Write the production stages from the method on process cards. The crop claim is deliberately unproven: pupils specify evidence needed, rather than inventing results.

Close of lesson

• Return models and keep the corrected work.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- A controlled fermenter.
- To support suitable growth and protein-production conditions.
- No; recovery, purification, processing and quality checks are essential.
- For example resistance to a specific pest.
- Genetic material transferred from one species to another.
- Benefits and risks depend on the organism, trait and environment.

References and provenance

Pearson Biology specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.