2025 Bi H2 Q11

Section: Sustainability and Interdependence
Topic: Crop Protection

Question Summary:
This question investigates the effect of sumithion concentration on hatching success, asks about variables, control treatments, drawing a graph, interpreting results, and problems with pesticide use.

Worked Solution

(a)(i) The independent variable is the **sumithion concentration**.

(a)(ii) One variable to control is the **temperature** of the water, or the **species** or **age** of the eggs.

(a)(iii) Control concentration: **0.0 mg per L**. Purpose: To **compare** the effect of the insecticide and show the hatching success without sumithion.

(b) A line graph should show a **decrease** in hatching success as sumithion concentration increases.

(c) Conclusion: As sumithion concentration increases, **hatching success decreases**.

(d) Another problem with pesticide use is **bioaccumulation**, **persistence** in the environment, or development of **resistant pest populations**.

Final Answer:
Independent variable: sumithion concentration. Control: 0.0 mg per L,

used for comparison. Conclusion: Higher concentrations reduce hatching success. Other problem: persistence, bioaccumulation, or resistant pests.

Revision Tips

- Always identify independent, dependent, and controlled variables clearly.
- Controls allow valid comparisons.
- Pesticides may persist or bioaccumulate.
- Graph trends must match table values exactly.