

Lesson: Do Fungicides Affect Bees?

Part 1 – Video Case Study

Watch: The Effects of Fungicides on Bumble Bee Colonies (HHMI BioInteractive).

While you watch, answer:

1. What was the independent variable?
2. What outcomes did the researchers measure?
3. Write the main result in one sentence.
4. What's one limitation or follow-up question you'd ask?

Part 2 – Practical Investigation

Title: Effect of Fungicide on Yeast Growth (Bee Microbe Model)

Materials (per group):

- 4 clear cups/test tubes
- Warm water, sugar, dried yeast
- Pipette/dropper or syringe
- Garden fungicide (provided by teacher)
- Gloves, goggles, marker

Method:

1. Label cups: Control (0x), Low (0.5x), 1x, 2x.
2. Mix a standard starter (yeast + sugar + warm water). Pour equal amounts into each cup.
3. Add fungicide dilutions to the treatment cups (control gets water only).
4. Observe for 20 minutes. Record foam height every 5 minutes. Take a photo if possible.

Data Table

Time (min)	Foam height (mm) Control	Low (0.5x)	1x	2x
0				
5				
10				
15				
20				

Graph: Plot foam height (y-axis) vs. time (x-axis) for each treatment.

Part 3 – Claim, Evidence, Reasoning (CER)

Claim: Does fungicide suppress microbial growth?

Evidence: Use your results + the video case study.

Reasoning: Link the effect on yeast to how bees might be affected (microbiome disruption, larval health, etc.).

Exit Question

When might fungicides pose the greatest risk to bees? Give two conditions and support with evidence.