Plant Growth Factors

SBI3C | Student laboratory assignment | 1 of 4

Prepare for your investigation

Name: _____ Date: _____ Class: _____

Research question

How do light, water, and mineral nutrient availability influence simulated plant height over 28 days?

Learning goal: use the virtual model to gather evidence, explain plant growth factors and communicate a supported conclusion.

Materials: WorksheetGalaxy virtual laboratory, this assignment, calculator or spreadsheet if needed. Virtual observations only; do not recreate hazardous procedures or perform physical fitness tests without teacher approval.

1. Define two relevant scientific terms from the Background Information tab. (K/U)

2. Write a prediction or hypothesis with a scientific reason. (K/U, T/I)

3. Identify the variable or feature compared, the measured outcome and constants or consistent observation criteria. (T/I)

Plant Growth Factors

SBI3C | Student laboratory assignment | 2 of 4

Perform the virtual laboratory

Open the corresponding virtual lab and read Background Information. Follow the investigation instructions below. Record authentic simulated results; do not invent data.

- State a testable hypothesis for each growth factor.
- Run a baseline treatment at 70% light, 70% water, and 70% nutrients.
- Change only light (for example 20%, 50%, 90%) and record day-28 height.
- Restore baseline; repeat for water, then nutrients.
- Run at least three replicates per treatment and compare mean heights.
- Identify independent, dependent, and controlled variables; describe limitations of the model.
- Use the Experiment tab to run trials. The Data & Graphs tab summarizes results and lets you export a CSV.

Record each completed observation using the simulator’s record control when available. Use Data & Graphs to review results. Export CSV if available; attach additional rows or screenshots when needed.

Record the exact settings and any changes to the method.

Plant Growth Factors

SBI3C | Student laboratory assignment | 3 of 4

Observations & results

Enter the actual results. Keep trial IDs consistent between continued tables. Attach the full exported data or extra sheets when the procedure requires more rows. Include units as displayed.

Data table 1

Trial / item	Light %	Water %	Nutrients %	Day	Height (cm)

Qualitative observations / sample calculation (show units where applicable)

Plant Growth Factors

SBI3C | Student laboratory assignment | 4 of 4

Analysis, conclusion & assessment

4. Present a labelled graph of a measured relationship, or an annotated diagram / comparison chart for qualitative investigations. Attach it separately. Explain the pattern using recorded evidence. (C, T/I)

5. Describe your baseline treatment and experimental method. (K/U, A)

6. Explain why a plant may not grow faster when only one factor is increased. (K/U, A)

7. Identify two limitations of this virtual model and suggest a real-plant follow-up experiment. (K/U, A)

Conclusion and evaluation: answer the research question, revisit the prediction using evidence, identify a model limitation and propose an improvement. (T/I, A)

Submit this assignment plus your completed Lab Report (printed or saved as PDF from the lab) and any supporting data/figures.

K/U: accurate concepts /10	T/I: method, data, reasoning /12	C: clear tables, units, report /8	A: explanation, conclusion, transfer /10

Total: /40