

Thigmomorphogenesis Lab Report

Laboratory reports must be written using the following guidelines and format listed below:

FORMAT (3pts)

- Student name and lab section should be typed in the top left corner of the paper
- The third person, past-tense voice should be used to write the report
- The report should be written using complete sentences, proper grammar, and correct punctuation and spelling
- Each section of the report should be labeled with the correct heading
- Clear and concise language that is sufficiently effective to communicate your thoughts is a must.

TITLE

- The title of the report should state the subject of the laboratory investigation
- The title should consist of a few well-chosen words, ten or less, that accurately reflect the scope of the report.
- The title should allow a reader to predict what was tested in the investigation.
- The title must include information presented in the Introduction and Results section of the report.

INTRODUCTION (7 pts)

The introduction of the lab report should provide a broad yet sufficient amount of background information regarding the topic of study, its' relevancy, and general points of interest. The introduction should also include a literature review that discusses what is already known about the topic. Additionally, the purpose of the study, the question being investigated and the hypothesis that was tested must be clearly stated.

The introduction should not include details about the procedures that were used in the study.

- Background information (from two of the cited resources) [1]
- The question being asked in the study.....[1]
- Address the questions “why is thigmomorphogenesis important?”[1]
- Proper format for scientific name of the plant[1]
- Proper in-text citation[1]
- Hypothesis written in an “if... then” ...format [2]

- A hypothesis is a general statement that answers the question that is being asked
- If (independent variable), then (dependent variable) than (control)

METHODS & MATERIALS (4pts)

The methods section describes the procedure and materials that were used to perform the laboratory investigation and should be written in the past-tense. It should not be written as a set of instructions for the reader to follow. Use explanations to state your methods rather than "cookbook" instructions. Do not include a separate section for materials that were used but instead include the materials as you describe the procedure that was followed. This methods and materials section should be written as one cohesive section. Do not copy any of the methods directly from the lab handout. The words you use to describe your methods should be original and your own.

Additionally, this section should clearly describe the experimental situation, the control situation, the constants and the type of observations that were made. The procedure should be explained in enough detail so that another person could replicate your experiment exactly as it was performed. For example, be specific and include the type and number of cups that were used to plant the beans, the watering and treatment schedule that were followed, the measurements that were taken, the number of trials that were performed and any calculations or statistical tests that were performed.

The rationale for your work should not be included in this section.

- Written in enough detail to be repeated by a stranger[1]
- Quantitative measurements and Control group clearly stated[1]
- (what was counted or measured, how often, # of trials, number of test subjects, etc.)
- Mention of graph(s) that were made without reference to figures[1]
- Statistical test(s) that were used stated without reference or interpretation[1]

RESULTS (13 pts)

The results section of the lab report should include the quantitative and qualitative data that the was obtained from the investigation. Data can often be reported most effectively in the form of one or more graphs or tables which are neatly organized and easy to read. A written description that clearly summarizes the results illustrated in each data table or figure must also be included, and each table and figure should be appropriately referenced. However, the description of the data should only point out trends or inconsistencies, and should not include explanations or interpretations. All figures and tables must be numbered and must include a legend. In addition, it

is important to indicate whether the data represents single readings or averages, and that all units of measurement are included and reported accurately (e.g., cm, ml, g, etc.).

Helpful Tips:

- Summarize the results in text form (include specific values for means, calculated t-value, critical value, degrees of freedom etc.), and appropriately reference tables and figures.
 - o i.e. "... average increase in length of germinated seedlings after 7 days of development for the control and treatment groups were calculated and resulted in 12.2 cm and 15.7 cm, respectively (Figure 1)."
- State whether the difference between the means is statistically significant. To do this, state whether the calculated T-value is greater or less than the critical value, and what that means about your hypothesis (i.e. the null hypothesis for the t-test is that the means are equal. So, if you reject the hypothesis, you are showing that there is a significant difference between the treatment group and the control group)
- Do not include any raw data (i.e. a table that shows all the stem diameters for all plants in your section)

The results section should be a substantial paragraph and should include the following:

- A graph comparing the mean change in height of the control and treatment groups [0.5]
- A graph using your data (table 9.5) showing the growth of your two plants over time.....[0.5]
- A T-test (calculations in a table; including all values) [3]
- A statement that addresses the statistical significance in the difference of means[3]

Figures (Graphs):

- Figures with properly labeled axes, Figure # and caption [2]
- Hand-Drawn or made using Excel/Google sheets; uploaded to Canvas or inserted into the electronic version of the paper [1]

Tables:

- Properly labeled columns with Table # and caption..... [2]
- Hand-Drawn or made in Excel/Google sheets; uploaded to Canvas or inserted into the electronic version of the paper [1]

DISCUSSION (7 pts)

The discussion section of the lab report should be used to interpret, analyze and explain the results of the laboratory investigation, and should go beyond simply re-stating the results. The significance of the findings should also be discussed and whether or not the results support or refute the hypothesis should be addressed. Questions for future studies may also be included, and attempts to connect the findings to the previous studies mentioned in the introduction should be made.

- Includes interpretation, analysis and explanation of the findings[4]
- Significance of findings and connection to previous studies included[2]
- The following question should be addressed: How would plants with a developmental response to touch have a selective advantage (survival advantage) in nature?[1]

LITERATURE CITED (2)

- At least two scholarly research/primary journal articles must be included. Textbooks, lab manuals, handouts, websites etc. are not considered primary journal articles.
- References that you have not been cited in the body of your paper should not be included. Conversely, a citation should not be included in the body of your paper without listing the full citation in the Literature Cited section.
- Format must follow the “Scientific Writing and Proper Citations” document on Canvas..... [2]

Additional notes:

Primary journal articles can include the papers you used for your poster and article summary. There is a folder on Canvas that contains ~15 of these papers. To find it go to the “Modules” tab and look for the section at the top called “Resources” and locate the folder called “Thigmomorphogenesis”. In here you’ll find the original handout on this study, the articles that people used for their posters and article summaries, and the information that was included in the lab manual. You can use the articles you worked with at the beginning of the semester or any of the article in the folder. You can also find new articles. Just be sure to cite it properly.