

# PLANT NUTRITION SPECIAL RESEARCH PROJECT

## *HYPOTHESIS DEVELOPMENT*

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Scientific progress is the combined result of making better measurements and developing better models. When measurements match models we gain confidence in both. Better models come from better theories - which come from better literature reviews.

Measurements are only valuable when they are made to support or disprove a theory. The first step in doing good science is to develop a good theory. The next step is testing the new theory.

Assignment: Study the literature most closely related to your special project, and write a concise literature review and proposal for your project.

Your response must have four sections:

1. Concise summary of the problem
2. Summary of the literature (with citations)
3. Statement of your hypothesis
4. Summary of proposed research approach

Your project proposal must be a maximum of 800 words, which is about three, double-spaced, typed pages with 12 point font. The fourth page will be literature citations. Include 6 to 12 citations. At the end of your report include a photocopy of the abstract from each paper that you reference.

You will be graded on the thoroughness of your literature review, and the clarity, conciseness, and insight of your proposal.

## FORMAT FOR SPECIAL PROJECT REPORT

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Your final report must be in journal format, which means that it needs to include the following 5 sections:

1. **ABSTRACT**
2. **INTRODUCTION**
3. **MATERIALS AND METHODS**
4. **RESULTS**
5. **DISCUSSION**

Page one should have your title at the top of the page with your name below it. Also include the class it was written for (Plant Nutrition - PSB 6430) and the date (Fall Semester 2005). Do not include a separate title page (I don't need the extra paper). Start the abstract right below your title. Clearly label each section.

### **ABSTRACT**

The abstract should all fit on the first page and should summarize the other 4 sections. The abstract is usually the last thing you write. It should include a sentence describing the reason for doing the project, concise materials and methods description, results, and discussion.

### **INTRODUCTION** (start at the top of the second page)

The introduction should review the published literature related to the subject and end with a statement of specific objectives and hypotheses for the study. You can start by cutting and pasting your previous literature review into this section.

### **MATERIALS AND METHODS**

The M and M section describes the procedures used in the study. It should have sufficient detail that another scientist could replicate the work. This is often the first section to write. Include any photographs that describe how you did things.

### **RESULTS**

The results section is usually written first along with the M and M section. The results are mostly Figures and Tables that summarize the data. Include photographs of your plants when possible. The Figures should be numbered consecutively and Figure captions should be written so that they "stand alone". This means that they describe what the Figure is showing without the reader having to read the text.

### **DISCUSSION**

The discussion section puts the work in perspective and tells what we now know as a result of this work. This is the hardest section to write because it requires a thorough knowledge of the literature.

### **LITERATURE CITED**

Include all citations in standard journal format.