

<b>CATEGORY Score</b>	<b>5 - exemplary</b>	<b>4 – well done</b>	<b>3 - accomplished</b>	<b>2 - developing</b>	<b>1 - beginning or incomplete</b>	<b>0 – not college level work</b>
<b>Introduction</b> Background information. <i>10 points – score x2</i>	Uses scientific sources to provide context for the experiment and explain the relevant scientific principles.	Uses scientific sources to provide some context for the experiment and explain the relevant scientific principles.	Some introductory information, but missing some major points or some of the information provided is irrelevant.	Very little background information provided.	Information provided is incorrect.	Very poor. Little to no correct background information is provided.
<b>Introduction</b> Organization <i>5 points</i>	Starts out broad and gradually focuses in on the specific experiment. Section is cohesive. Ends with a clearly stated hypothesis.	Starts out broad and gradually focuses in on the specific experiment. Ends with a clearly stated hypothesis. However, organization needs work.	Introduction is not cohesive. No connections between paragraphs or ideas. <i>Or</i> Hypothesis is at end of intro but is unclear or unscientific ex:“I believe” or “I will prove”.	Organization needs work. Individual paragraphs contain multiple, disjointed ideas. <i>Or</i> hypothesis is stated in the beginning or middle of the introduction.	Immediately jumps into study system without providing any broader context.  <i>Or</i> no hypothesis is stated.	Very poorly organized and no hypothesis is stated.
<b>Methods</b> Study system <i>5 points</i>	Both study species properly introduced with relevant details.	Both study species introduced, but one species needs a more detailed introduction.	Both study species introduced, but both species more information.	Both study species introduced with multiple irrelevant details.	Only one species is introduced.	No study system.
<b>Methods</b> Description of the experiment <i>10 points – score x2</i> See list at end of rubric.	No major or minor mistakes in the description of the experimental design or statistical analysis.	One or two minor mistakes in the description of the experimental design or statistical analysis.	Three to four minor mistakes in the description of the experimental design or statistical analysis.	One major mistake in the description of the experimental design or statistical analysis.	Two or three major mistakes in the description of the experimental design or statistical analysis.	Four or more major mistakes in the description of the experimental design or statistical analysis.
<b>Results</b> Text <i>5 points</i>  See list at end of rubric.	No major or minor mistakes in the results section text.	One or two minor mistakes in the results section text.	Three or four minor mistakes in the results section text.	One major mistake in the results section text.	Two or three major mistakes in the results section text.	No text.
<b>Results</b> Statistics <i>5 points</i>  See list at end of rubric.	No major or minor mistakes in the statistics.	One or two minor mistakes in the statistics.	Three or four minor mistakes in the statistics.	One major mistake in the statistics.	Two or three major mistakes in the statistics.	No statistics used.

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<b>Results</b> Figures and Tables <i>5 points</i>	No major or minor mistakes in the figures or tables.	One or two minor mistakes in the figures or tables.	Three or four minor mistakes in the figures or tables.	One major mistake in the figures or tables.	Two or three major mistakes in the figures or tables.	No tables or figures.
<b>Discussion</b> Interpretation of results <i>10 points – score x2</i>	All important trends and data comparisons are interpreted correctly and discussed. Good understanding of results is conveyed. Includes a strong discussion of original hypothesis and why it was or was not supported.	All results correctly interpreted with one minor mistake. Good understanding of results is conveyed. Includes a discussion of original hypothesis and why it was or was not supported.	One major mistake in interpreting results. Or two minor mistakes. Weak understanding of results is conveyed. Weak discussion of original hypothesis and why it was or was not supported.	Two or more major mistakes in interpreting results. Weak understanding of results is conveyed.	Very incomplete or incorrect interpretation of trends and comparison of data indicating a lack of understanding of results. Little or no discussion of original hypothesis and why it was or was not supported.	All results incorrectly interpreted. No discussion of original hypothesis.
<b>Discussion</b> Connections <i>5 points</i>	Strong connections made to similar research and underlying principles and theory explaining the work.	Good connections made to similar research and underlying principles and theory explaining the work.	Weak connections made to similar research. <i>Or</i> weak connections to underlying theory explaining the work.	Weak connections made to similar research and weak connections to underlying theory explaining the work.	Little or no connection to similar research. Or little or no connection to underlying theory.	No connections to other research. No connections to underlying theory.
<b>References</b> <i>5 points</i>	All sources are accurately cited and references following ESA format. All sources are appropriate.	All sources are accurately documented, but 1 or 2 are not in the correct format. All sources are appropriate.	All sources are accurately documented, but 3 or more are not in the correct format. <i>Or</i> one or two inappropriate sources.	Three or more non-scholarly sources.	References are not directly cited in text.	Contains no scholarly or peer reviewed sources.
<b>Mechanics</b> <i>5 points</i>	All grammar/spelling correct and very well-written. Mature, readable style. Good example of scientific writing.	Fewer than 5 grammar/spelling errors, mature, readable style. Majority of the writing is scientific.	Fewer than 10 grammar/spelling errors. Often uses unscientific writing.	Occasional grammar/spelling errors, generally readable with some rough spots in writing style.	Frequent grammar and/or spelling errors, writing style is rough and immature.	Frequent grammar and/or spelling errors, writing style is difficult to understand.
<b>Appearance &amp; Formatting</b> <i>5 points</i>  See list at end of rubric.	All sections in order, well formatted, sections and subsections are labeled. Formatting enhances readability. Succinct, descriptive title. No title page.	One minor formatting or appearance mistake.	Two or three minor formatting or appearance mistakes.	One major formatting or appearance mistake.	No evidence of formatting.	Formatting impedes understanding.

## METHODS - NARRATIVE

5 minor mistakes = 1 major mistake

### Minor mistakes

- A minor detail is omitted, each detail omitted counts as 1 minor mistake – for example randomization (if appropriate), tool or instrument used.
- A minor mistake in the description – for example a date is incorrect by one or two days, replication is incorrect
- And other minor mistakes not yet explicitly mentioned.

### Major mistakes

- Replication not indicated.
- Not written in past tense.
- Includes a bulleted list of materials used.
- Doesn't include a description of all the dependent variables.
- Doesn't include a description of the statistics used.

## RESULTS – TEXT

5 minor mistakes = 1 major mistake

### Minor mistakes

- Redundant sentence
- A figure or table is not mentioned in the results section text.
- One figure or table is mentioned out of order.
- And other minor mistakes not yet explicitly mentioned.

### Major mistakes

- Results are interpreted or explained.
- Long, redundant results section that repeats information (like averages, standard deviation) already presented in figures or tables.
- Results section text is not a single paragraph at the beginning of the results section.

## RESULTS - STATS

5 minor mistakes = 1 major mistake

### Minor mistakes

- Doesn't include the actual p-value, instead just presents  $p < 0.05$  or  $p > 0.05$ .
- p-values or t-statistics are presented with more than 4 significant figures.
- Degrees of freedom number is not a subscript.
- And other minor mistakes not yet explicitly mentioned.

### Major mistakes

- Statement of significant difference when  $p > 0.05$
- Statement of no difference when  $p < 0.05$
- Statistics not presented for a dependent variable.
- Statistics presented or repeated in the discussion section.
- Incorrect statistics (t-statistic or p-value is wrong).

## RESULTS – FIGURES & TABLES

5 minor mistakes = 1 major mistake

### Minor mistakes

- Not enough information is presented in caption.
- Statistics are repeated in the caption.
- A legend is included when it is unnecessary.
- A legend is missing when it is necessary (ex: box plot).
- And other minor mistakes not yet explicitly mentioned.

### Major mistakes

- Missing standard error bars when appropriate.
- No captions.
- Missing x or y-axes labels.
- A figure or table is redundant.
- Includes t-test table from excel.
- A figure includes individual replicates and not averages (median, etc).
- A figure includes multiple variables in the same figure that shouldn't be presented together (for example pH and dissolved oxygen sharing the same y-axis).
- A figure that should include multiple lines or bars (like box plots comparing fertilizer and control treatments) is separated into two figures.

## FORMATTING & APPEARANCE

### Minor mistakes

- Methods section doesn't include subheadings.
- Title is vague (for example: Herbivory lab report).

### Major mistakes

- Weird spacing or font size to make paper appear longer
- No title
- Includes a title page
- Sections are not labeled

