

15 Jan 2009

# CO<sub>2</sub> Exchange in Plants

Measuring CO<sub>2</sub> uptake across surface of leaf. This provides a measure of

NET PHOTOSYNTHESIS or

APPARENT PHOTOSYNTHESIS (APS)

Why?

$$APS = \text{Gross P/s} - \text{Respiration}$$

We can approximate respiration by measuring CO<sub>2</sub> output in the dark

## What factors affect P/s?

- 1) Temp
- 2) H<sub>2</sub>O avail.
- 3) Light quality + quantity
- 4) [CO<sub>2</sub>]
- 5) [O<sub>2</sub>]
- 6) Nutrient status

# This week(+next) labs

Whole plant P/s



Ecophysiology



assess effect of various  
environ. factors on  
 $\text{CO}_2$  assimilation  
(carbon reduction rxns)

P/s in isolated cps



Biochemistry



assess effect of various  
 $\text{e}^-$  acceptors or blockers of  
 $\text{e}^-$  flow, light quality  
on light rxns

### Marking Rubric for BISC 367W (Spring 2007)

Grade	Overall	Thoroughness	Data Presentation	Accuracy	Writing
A	Excellent	Complete piece of work. All arguments supported by data or by 1 <sup>o</sup> literature. Interpretation of results shows clarity and insight. Abstract is concise.	All data are well prepared, clearly labeled & easy to follow. Illustration(s) has been included to support argument or interpretation of data. Note, an illustration is NOT required. Data are described with clarity.	All scientific concepts are accurately described. Writing is excellent: focused, well organized with a mix of simple, declarative sentences and more complex sentences. Ideas clearly expressed and scientific language is used appropriately.	At the low end of the A grade there will be minor writing errors (tense and/or spelling).
B (high)	Good	Complete piece of work. Arguments generally supported by data or 1 <sup>o</sup> literature. Interpretation of data shows some insight. Abstract is concise.	All data are well prepared. Graphs and tables are labeled. An illustrative figure to support a major argument is missing when including one would have provided greater clarity. Data are adequately described.	Scientific concepts are explained. Writing is good and well organized. Some minor errors are present.	Minor writing errors are present. Paper could have been better organized.
B (low)	Adequate	Work is complete but interpretation lacks insight. Abstract includes too many points including the critical conclusions.	Data are adequately prepared and well labeled. Data are described adequately.	Major concepts are generally accurate but there are more minor errors and the writing is not as well organized as for the high B grade.	Writing skills are adequate with minor errors and less than adequate organization.
C	Adequate but only just	Work is complete but interpretation indicates some level of misunderstanding. Abstract is not concise.	Data are all present but not well-labeled and minor errors are present. Data are described but not fully.	Minor errors exist in presenting major concepts. Numerous minor errors throughout combine to make the report chaotic and suggest misunderstanding.	Writing skills are below the average for an undergraduate.
D	Poor	Major concepts missing. Poor effort to interpret data and/or major lack of understanding of data. Abstract confused.	Some data are missing or data present with significant errors. Data poorly described	Major errors in presenting concepts. Errors in interpreting data. Report is confused and poorly organized.	Writing skills are poor.

## BISC 367 Formatting Checklist

1. General formatting:
  - a. The title page includes your name, student number, the date, a clear title and draft number?
  - b. The title is informative, original and not too long?
  - c. The abstract is on a separate page and not more than 250 words long?
  - d. The pages are numbered and the text is double-spaced?
  - e. Hyperlink web addresses connect to the correct web page?
  - f. Is your font Times New Roman, Courier New or Ariel?
  - g. Does your report include all sections in the following order: Introduction, Results, Discussion, Conclusions, Materials and Methods?
  - h. Does your nomenclature conform to that specified for "Plant Physiology"?
2. Data (Figures and Tables)
  - a. All figures are numbered and composite figures have each part labeled?
  - b. All figures are described in the Results section?
  - c. All figures have an informative legend?
  - d. All tables have a short title and legend?
2. References
  - a. Most of your sources are from the primary literature?
  - b. In-text citations are correctly formatted?
  - c. The Literature Cited section is correctly formatted?
  - d. You have used a minimum of three primary literature sources – excluding reviews?
  - e. Your primary literature includes at least one paper that is more recent than 2002?

INDICATE YOUR RESPONSES TO EACH ITEM IN THE TABLE BELOW. You can ask a fellow student to assess your report too (peer assessment)

Self assessment		Peer assessment	
YES	NO	YES	NO
1a			
1b			
1c			
1d			
1e			

1f			
1g			
1h			
2a			
2b			
2c			
2d			
3a			
3b			
3c			
3d			
3e			

Since this is the first time I have offered a 'W' course I am inviting comments that speak to what you find helpful and anything that you would like to see included. Please write in the box below and hand this sheet in with your report – Thanks!!