## Principles of Postharvest Horticulture HOS 4332C & 5085C - 3 CREDITS Spring 2024 RESEARCH PROJECT

The goal of this project is to demonstrate some aspect of postharvest biology and handling of a perishable horticultural crop. Arrangements will be made for the use of needed laboratory equipment and any required assistance or training. Moshe Doron and/or Dr. Brecht will assist you in preparing for and conducting the projects. Do not hesitate to contact us if you have questions.

Due Dates:	
2/7	Propose a research topic for approval
3/6	Progress reports due (verbal)
4/17	Project reports due (a 10-min ppt presentation) Student presentations

Your research report should describe the purpose, set-up and results of the research project. The report will be turned in as a PowerPoint presentation and will be posted to the class website for viewing and voting by the other students.

## **Reports should include:**

- 1. TITLE of the project and your name.
- INTRODUCTION, including the OBJECTIVE(S) of the project what question(s) are you trying to answer; why is it important to answer the question(s), as well as what is currently know about the question(s) you are addressing.
- 3. MATERIALS & METHODS how your research was conducted. What product did you study; what was the experimental set-up or protocol; what measurements did you make and how and how did you make them?
- 4. RESULTS make it visual!
- 5. CONCLUSION a discussion of the results and their significance

The research project represents 1 out of the 3 credits for this course. Thus, your project should represent roughly 30 hours of lab time. Consider that when you are considering your choice of topic and the size of the experiment you plan to conduct. There will be several previous reports available on the course website as examples.

## Reports will be graded using the following criteria (Total = 100 pts.):

- 10 pts. Organization it should be brief, clear and simple.
- 15 pts. Presentation of background information (demonstrate that you know something about the topic this includes how you answer questions about your project.
- 25 pts. Experimental design does the experiment answer the question(s) being asked?
- 20 pts. Quality of data collection and presentation (results section).
- 25 pts. Discussion ability to explain the significance of the results and any possible applications. What further studies do the results suggest should be conducted?
- 5 pts. Quality of images, tables and figures.

## **RESEARCH PROJECT TOPIC IDEAS**

- 1. Factors affecting respiration, ethylene production and quality deterioration.
  - a) Compare different commodity types
  - b) Compare different storage temperatures and durations
  - c) Investigate MA or CA effects
  - d) Demonstrate the effects of ethylene exposure and/or scrubbing
  - e) Demonstrate the effects of physical damage
- 2. Factors affecting transpiration and water loss
  - a) Demonstrate the effect of water vapor pressure differences
  - b) Show how air velocity affects water loss
  - c) Investigate the effects of product surface: volume ratio and surface properties on water loss
  - d) Test the effectiveness of water vapor barriers (films and coatings)
- 3. Physiological disorders
  - a. Low temperature (chilling) injury
  - b. High temperature injury
- 4. Pathological considerations
  - a. How does the physiological state of the product affect decay?
  - b. Determine the effects of storage temperature and moisture on decay
  - c. Investigate how natural and artificial surface barriers can protect products from decay
  - d. Demonstrate chemical control of decay

**NOTE:** You can first choose a topic and/or choose a commodity that interests you, then discuss ideas for interesting, appropriate and "do-able" experiments with Dr. Brecht and/or Dr. Ritenour.