

## Assignment & Activity Design

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### 1. GREENHOUSE SELECTED CROP PRODUCTION – CASE STUDY & PRESENTATION

#### Description of the assignment

- Each group (of 3-4 students) will present a 30-35 minutes PowerPoint of their ideal greenhouse to produce a selected crop.
- The greenhouse crop and partners for presentations must be approved by the 3rd week of the class.
- Presentations will take place on weeks 15-16 during laboratory hours (4 groups each day).

#### Elements of the assignment

- Each group is required to use the gained knowledge from class lectures & discussions during the semester, research from credible sources, cite sources properly, understand & communicate the information, using proper scientific greenhouse-related terminology.

#### Method of assessment

On the chosen crop, you must study and present the following (total 1000 pts):

100 pts- Provide an overview

- *The history of the use of the crop.*
- *Is this crop a long-time standard?*
- *Is it a new introduction?*
- *How is it sold?*

100 pts- Present economic value of the crop.

- *You may check out California's Counties Crop Reports.*

350 pts- Discuss the cultivation of the crop, including:

- *Propagation technique(s): what is best/most used? Seeds, cuttings, plugs, etc.*
- *Best media: any unusual requirements?*
- *Fertilization program: what is standard?*
- *Irrigation schedule (moisture): how often?*
- *Temperature: what is best? Does it change as the crop mature?*
- *Light: extra light needed? How many hours per day?*
- *Plant growth regulators used (if any): what is the purpose?*
- *Time to finish crop (scheduling): how many days from start to finish?*
- *The average cost of production: labor, inputs, energy, facilities, etc.*
- *Does the size of production affect the costs and how (in detail)?*

200 pts- Provide an overview of any pest and disease problems, including:

- *How are they identified (What do they look like –pictures required)*
- *When do they become a problem: at what stage of production (seedling, finishing?)*
- *How to best manage them: typical management tactics?*

250 pts- Overall presentation: creativity, informative, conciseness, appearance, presentation time, etc.

- *Points will be deducted for presentations exceeding 35 minutes or shorter than 30 minutes.*
- *Using videos (if any) in the presentation is limited to at most 7 min.*
- *A proper citation includes the use of credible scientific peer-reviewed journal papers, books, and Universities' web links/videos.*

## NARRATIVE

During the semester, the required information to achieve this case study will be demonstrated/discussed in the class. Students are required to implement the gained knowledge into their presentations for successful production of the chosen crop. This case study improves critical thinking, creativity, holistic view, and confidence in students.

## 2. EVALUATION OF THE EFFECTS OF POT SIZE ON PLANT QUALITY, GROWTH AND DEVELOPMENT

### Description of the activity

- Students will learn how the pot (container) size would affect plant final size, growth, and development in this activity.
- The importance of this activity is to understand the economics of land and time use efficiency, quality produce, and marketing of a selected crop.
- Different container sizes are filled with the same media and sown the same plant seeds. The same growing conditions are provided to all plants during this experiment.
- At the end of the experiment, plants will be evaluated for their quality characteristics (stem thickness, plant height, fresh weight, leaf area).
- Upon the end of the experiment, the best size for growing transplants of the selected crop will be determined.

### Elements of active and/or experiential learning

- Choose different container sizes.
- Select one unique media for growing transplants of a particular plant.
- All environmental conditions for growing quality transplants must be provided during the experiment.
- At the end of experiment, record and compare plant quality characteristics (stem thickness, plant height, fresh weight, leaf area).

### Strategies for student engagement

- This is a group work activity; all group members are required to participate in all steps/processes.
- Each group must use the gained knowledge from class lectures & discussions and research from credible sources using proper scientific terminology.
- In the end, each group is required to write a report about the results, discuss the reasons for differences, and determine the best container size considering the quality, economy, and efficiency.

## NARRATIVE

Several factors influence transplant production and performance. The transplant production process involves optimizing the many factors that govern both seedling production and post-plant performance. Various container sizes or soil volumes affect transplant production and establishment.

The issue of container size is extremely important to both transplant producers and transplant consumers. A trend among many commercial transplant producers is toward more cells per tray (smaller containers), which increases the number of plants produced, while reducing the need to develop more transplant production space. This trend also reduces propagation costs per plant. While the use of smaller containers may improve the efficiency of transplant production, it is unclear how plants grown in smaller root volumes will perform under post-plant field conditions. A major effect of decreased container size is that it increases root-restricting conditions experienced by transplants.

This experiment shows students how container size would affect the quality, efficiency and economy of production. It also improves students' ability to determine the best conditions for production, by performing experimental design, critical thinking, and decision-making.