

# Introduction to Horticulture (2014)

Adopted 2014

## Introduction to Horticulture

- a. Explain systems used to classify plants. PS.01.01.01.A
- b. Compare and contrast the hierarchical classification of agricultural plants. PS.01.01.01.B
- a. Describe the morphological characteristics used to identify agricultural plants. PS.01.01.02.A

## Safety Fundamentals

- a. Use proper safety practices/personal protective equipment. CS.06.02.01.A

## Chemical Safety

- a. Research applicable regulatory and safety standards (e.g., MSDS, bioterrorism). CS.07.04.01.A
- a. Handle chemicals and equipment in a safe and appropriate manner. CS.07.04.02.A
- a. Identify storage methods for plants and plant products.<ul><li>fertilizer and chemical storage</li></ul> PS.03.05.03.A

## Hand and Power Tools

- a. Identify standard tools, equipment, and safety procedures related to a specific task. CS.08.01.01.A
- b. Set up/adjust tools and equipment related to complete a specific task. CS.08.01.01.B
- b. Demonstrate appropriate operation, storage, and maintenance techniques for tools and equipment. CS.08.01.02.B
- a. Use the appropriate procedures for the use and operation of specific tools and equipment. CS.08.02.01.A
- a. Describe the conditions that cause the need for tool maintenance. CS.08.03.01.A

## Growing Facilities

- a. Identify storage methods for plants and plant products.<ul><li>greenhouse benches and storage</li></ul> PS.03.05.03.A

## Plant Structures

- a. Diagram a typical plant cell and identify plant cell organelles and their functions.** PS.01.02.01.A

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- a. Identify the components, the types and the functions of plant roots.** PS.01.02.02.A

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- a. Identify the components and the functions of plant stems.** PS.01.02.03.A

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- a. Discuss leaf morphology and the functions of leaves.** PS.01.02.04.A

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- a. Identify the components of a flower, the functions of a flower and the functions of flower components.** PS.01.02.05.A

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- a. Explain the functions and components of seeds and fruit.** PS.01.02.06.A

## Plant Functions

- b. Explain how leaves capture light energy and allow for the exchange of gases.** PS.01.02.04.B

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- a. Explain the basic process of photosynthesis and its importance to life on Earth.** PS.01.03.01.A

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- a. Explain cellular respiration and its importance to plant life.** PS.01.03.02.A

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- a. Identify the five groups of naturally occurring plant hormones and synthetic plant growth regulators.** PS.01.03.04.A

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- b. Identify the plant responses to plant growth regulators and different forms of tropism.** PS.01.03.04.B

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- a. Observe and record environmental conditions during the germination, growth and development of a crop.** PS.03.02.04.A

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- a. Explain the reasons for controlling plant growth.** PS.03.02.05.A

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- b. Demonstrate proper techniques to control and manage plant growth through mechanical, cultural or chemical means.** PS.03.02.05.B

## Plant Growth Media

- a. Explain the process of soil formation through weathering.** ESS.03.02.01.A

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- a. Explain how the physical qualities of the soil influence the infiltration and percolation of water.** ESS.03.02.03.A

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- a. Demonstrate techniques used to identify rock, mineral and soil types.** NRS.01.02.05.A

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- b. Identify rock, mineral and soil types.** NRS.01.02.05.B

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- a. Identify the major components of growing media and describe how growing media support plant growth.** PS.02.02.01.A

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**a. Identify the categories of soil water.** PS.02.02.02.A

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**b. Discuss how soil drainage and water-holding capacity can be improved.** PS.02.02.02.B

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**a. Explain the reasons for preparing growing media before planting.** PS.03.02.02.A

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## Fertilizers and Nutrients

**a. Identify the essential nutrients for plant growth and development and their major functions.** PS.02.03.01.A

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**b. Describe nutrient deficiency symptoms and recognize environmental causes of nutrient deficiencies.** PS.02.03.01.B

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**a. Identify fertilizer sources of essential plant nutrients, explain fertilizer formulations, and describe different methods of fertilizer application.** PS.02.03.04.A

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**b. Calculate the amount of fertilizer to be applied and calibrate equipment to apply the prescribed amount of fertilizer.** PS.02.03.04.B

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**a. Identify storage methods for plants and plant products.**

- fertilizer and chemical storage

 PS.03.05.03.A

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## Greenhouse Watering

**a. Observe and record environmental conditions during the germination, growth and development of a crop.** PS.03.02.04.A

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## Plant Propagation

**a. Explain pollination, cross-pollination and selfpollination of flowering plants.** PS.03.01.01.A

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**a. Demonstrate sowing techniques and provide favorable conditions for seed germination.** PS.03.01.02.A

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**b. Handle seed to overcome seed dormancy mechanisms and to maintain seed viability and vigor.** PS.03.01.02.B

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**a. Describe optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation and layering.** PS.03.01.03.A

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**b. Demonstrate proper procedures in budding or grafting selected materials.** PS.03.01.03.B

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**a. Explain the importance of starting with pestand disease-free propagation material.** PS.03.02.01.A

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## Deciduous and Evergreen Plants

No specific standards.

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**Cultural Practices for  
Trees and Shrubs**

**No specific standards.**

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**Plant Pests and  
Treatment**

- a. Identify types of plant pests and disorders.** PS.03.03.01.A

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  - b. Identify major local weeds, insect pests and infectious and noninfectious plant diseases.** PS.03.03.01.B

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  - a. Describe damage caused by plant pests and diseases.** PS.03.03.02.A

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  - a. Describe pest control strategies associated with integrated pest management.** PS.03.03.03.A

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  - b. Describe types of pesticide controls and formulations.** PS.03.03.03.B

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  - a. Explain risks and benefits associated with the materials and methods used in plant pest management.** PS.03.03.04.A

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  - b. Explain procedures for the safe handling, use and storage of pesticides.** PS.03.03.04.B
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**Landscape Design**

- a. Define design and identify design elements.** PS.04.01.01.A

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  - b. Explain design elements of line, form, texture and color and express the visual effect each has on the viewer.** PS.04.01.01.B
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**Indoor Plant Care**

**No specific standards.**

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**Floral Design**

- a. Define design and identify design elements.** PS.04.01.01.A

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- b. Explain design elements of line, form, texture and color and express the visual effect each has on the viewer.** PS.04.01.01.B