



**NOCTI**  
State Customized  
Credential Blueprint



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# **Applied Horticulture (PA)**

Code: 8157 / Version: 01  
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## General Assessment Information

### Blueprint Contents

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| General Assessment Information            | Sample Written Items               |
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**Test Type:** The Applied Horticulture PA Assessment was developed based on a Pennsylvania statewide competency task list and contains a multiple-choice and performance component. This assessment is meant to measure technical skills at the occupational level and includes items which gauge factual and theoretical knowledge.

**Revision Team:** The assessment content is based on input from Pennsylvania educators who teach in approved career and technical education programs.



1.0601- Applied Horticulture/Horticultural  
Operations, General



Career Cluster -  
Agriculture, Food &  
Natural Resources

## Written Assessment

NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 3 hours

**Number of Questions:** 200

**Number of Sessions:** This assessment may be administered in one, two, or three sessions.

### Areas Covered

**Safety** 12%

**Safe and Proper Plant Health Care Practices** 13%

**Basic Botany** 19%

**Horticulture Business Operations** 9%

**Soils and Climate** 17%

**Sustainable Horticulture** 7%

**Horticulture Technology** 1%

**History and Current Status of Horticulture** 5%

**Plant Identification** 17%

## Specific Standards and Competencies Included in this Assessment

### Safety

- Identify and follow all general safety, laboratory safety, and field-site safety practices and procedures in horticulture
- Identify and follow all OSHA safety standards for the horticulture services industry
- Identify and follow procedures written in the Safety Data Sheet (SDS) information system
- Demonstrate the safe use of horticulture equipment
- Select the proper protective clothing and equipment
- Demonstrate basic first aid procedures for injuries

### Safe and Proper Plant Health Care Practices

- Practice safety when controlling weeds, insects, and plant diseases
- Read and interpret horticulture product labels
- Properly calculate and mix quantities of horticulture products used in plant health care
- Define the concept of, "Plant Health Care," such as disease, nutrients, etc.
- Distinguish the components of an Integrated Pest Management program including the effects of chemicals and pesticides on the environment
- Identify various horticultural pests including their signs and symptoms
- Identify and use equipment for the application of plant health care products



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## Specific Standards and Competencies (continued)

### Basic Botany

- Describe the process of photosynthesis, respiration, translocation, and transpiration
- Identify plant cell structure, organization, and function
- Identify plant structures and explain their functions
- Identify conditions essential for seed germination
- Explain the environmental factors that affect the growth and development of a plant
- Distinguish between sexual and asexual plant reproduction
- Identify plant nutrient requirements
- Classify plants and use appropriate binomial taxonomic terminology

### Horticulture Business Operations

- Develop a horticultural business plan
- Analyze pricing and mark-up techniques
- Demonstrate appropriate customer/client relationship attributes
- Identify and develop various horticulture record keeping systems
- Analyze business ethics

### Soils and Climate

- Identify and describe soil characteristics
- Identify soil and/or plant nutrients
- Conduct proper soil sampling techniques
- Describe factors influencing fertilizer application
- Identify environmental factors that affect plant growth
- Describe how weather and climate impact growing conditions and plant selection



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## Specific Standards and Competencies (continued)

### **Sustainable Horticulture**

- Identify different methods of sustainable horticulture
- Compare sustainable watering and fertilizing techniques to conventional techniques
- Compare sustainable plant material selection to conventional plant material
- Recycle horticultural waste

### **Horticulture Technology**

- Research advanced technologies in horticulture equipment

### **History and Current Status of Horticulture**

- Describe the role horticulture plays in the economy of the state and nation
- Identify current issues regarding plant and soil management that impact agronomic and horticultural practices

### **Plant Identification**

- Outline the proper use of plant material in various segments of the horticulture industry
- Determine the impact of environmental factors on plant materials
- List the identifying characteristics of various plant categories associated with plants
- Identify 100 plants used in horticulture industry by horticultural reference/botanical reference



## Sample Questions

**Injury produced from a single toxic exposure is called \_\_\_\_\_ toxicity.**

- A. chronic
- B. acute
- C. LD50
- D. lethal

**A serious disease of roses is**

- A. fire blight
- B. twig blight
- C. black spot
- D. canker stain

**Plant parts important in sexual reproduction of the parent plant include**

- A. flowers
- B. bulblets
- C. runners
- D. cormels

**A benefit to customers of Internet sales is that**

- A. payment is often by credit card
- B. very little data is transferred during a sale
- C. most sites lack secure protocols
- D. membership fees are required

**Add \_\_\_\_\_ to soil to prevent chlorosis in plants.**

- A. nitrogen
- B. potassium
- C. zinc
- D. phosphorus

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## Sample Questions (continued)

### Soil erosion is caused by

- A. not fertilizing and watering
- B. applying lime at high levels
- C. large insect and disease infestations
- D. wearing away of the soil due to water or wind

### The process for growing plants in a water and nutrient solution without soil is called

- A. xeriscaping
- B. hydroponics
- C. aquaculture
- D. olericulture

### Advanced technology in horticulture equipment includes

- A. shovel, rake, and wheelbarrow
- B. tractor, weed-wacker, and lawn mower
- C. computerized greenhouse systems, and ebb and flow benching
- D. hydrostatic tractors and chainsaws

### Which area of horticulture produces the most jobs in the United States?

- A. greenhouse and nursery industry
- B. floral design industry
- C. horticulture services industry
- D. olericulture services industry

### Which of the following is a shade-tolerant plant?

- A. juniper
- B. switch grass
- C. hosta
- D. rose



## Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

**Administration Time:** 3 hours

**Number of Jobs:** 5

### Areas Covered:

#### 24% Plant Classification and Identification

Participants will identify and record 70 plants by common name and by classification.

#### 12% Integrated Pest Management

Participants will identify two pest problems and two plant diseases and consult charts for treatment and rates of application.

#### 39% Soils

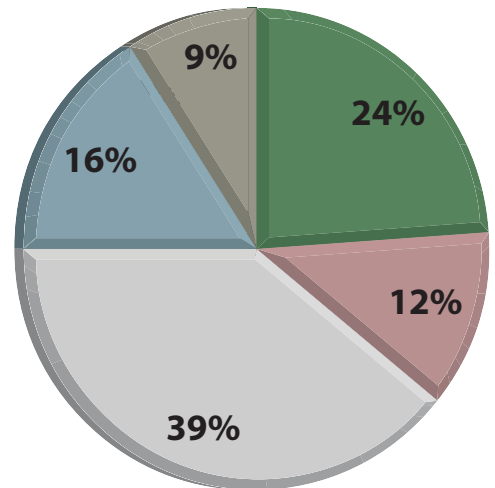
Participants will identify five types of soil amendments. Select the mixture and measure the soil. Collect soil samples and record findings based on the soil report.

#### 16% Plant Propagation

Participants will prepare containers for starting by direct sticking plant cuttings. Steps will include harvesting the cuttings using sterile technique, proper use of cutting equipment, and treating with rooting compound.

#### 9% Customer Service

Participants will greet customer and perform a sales transaction including sales tax and prepare a receipt.



## Sample Job

### Customer Service

**Maximum Time:** 20 minutes

**Participant Activity:** Participants will greet a customer, calculate the total including sales tax and write a receipt for the purchase, using a cash register or money box and calculator. Collect payment and return the correct change.

