General Assessment Information

**Test Type:** The Plant Science/Horticulture assessment was developed based on standards used in the state of Georgia 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 Georgia educators who teach in career and technical education programs.

**Blueprint Contents**

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**CIP Code**

1.0601- Applied Horticulture/Horticultural Operations, General

**Career Cluster 1-**

Agriculture, Food & Natural Resources

**O*NET**

45-2092.00 - Farmworkers and Laborers, crop, Nursery, and Greenhouse
Written Assessment

This written assessment consists of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 90 Minutes
**Number of Questions:** 100
**Number of Sessions:** This assessment may be administered in one, two, or three sessions.

**Areas Covered**

- **Basic Agriculture Science and Technology** 20%
- **General Horticulture and Plant Science** 40%
- **Nursery and Landscape** 40%
Specific Standards and Competencies Included in this Assessment

Basic Agriculture Science and Technology
- Discuss the importance of reading and adhering to pesticide label directions
- Explain different plant life cycles and give examples
- Identify the major parts of the plant
- Describe the functions of vegetative plant parts
- Distinguish between plant root systems and how they absorb water and nutrients
- Explain ways plants reproduce
- Describe the role of seed in reproduction, sexually and asexually
- Explain the role of flowers in reproducing plants
- Describe germination and the conditions under which it occurs
- Explain the application of vegetative propagation
- Discuss use of improved seeds and cultivars and the importance of improved seed
- Explain important factors in plant growth
- Explain photosynthesis and its importance
- Explain respiration and transpiration and their importance
- Identify essential plant nutrients for plant growth and reproduction
- Describe how pests are prevented and methods used to control them after infestation
- Explain supply and demand in agriculture
- Explain the role of the Agriculture Education program and the FFA in personal development
- Develop leadership and personal development skills through participation in the FFA

General Horticulture and Plant Science
- Explain the role of Agriculture Education programs and the FFA in personal development
- Demonstrate knowledge learned through a Supervised Agricultural Experience (SAE) program
- Develop leadership and personal development skills through participation in the FFA
- Explore career opportunities in horticulture/plant science through the FFA and the Agriculture Education Program
- Explore the professional agricultural organizations associated with the course content
- Explain the three phases of plant life (dormancy, vegetative, reproductive)

(Continued on the following page)
Specific Standards and Competencies (continued)

General Horticulture and Plant Science (continued)
• Explain the three phases of plant life (dormancy, vegetative, reproductive)
• Describe the difference between annuals, biennials, and perennials
• Identify vegetative structures and functions of plant parts (i.e., leaves, stems, roots)
• Identify sexual reproductive structures and functions of plant parts (i.e., flower, fruit, seeds)
• Identify asexual reproductive structures and functions of plant parts (i.e., stems, roots)
• Discuss the importance of plant propagation
• Explain the difference between sexual and asexual propagation
• Describe the factors involved in planting seeds
• Discuss the various methods of vegetative propagation and identify each method
• Explain the difference between separation and division in plant propagation
• Describe soil materials and structure
• Describe the components and functions of a good growing medium
• Name the nutrients needed for plant growth
• Identify common nutrient deficiency symptoms
• Describe pH modification
• Explain fertilizers and fertilization
• Analyze the difference between organic and inorganic fertilizers
• Demonstrate fertilizer application methods
• Identify common insects, weeds, diseases, and physiological disorders
• Diagram the external structure of an insect
• Trace the life cycles of insects
• Describe the type of damage inflicted by weeds
• Describe the types of plant diseases
• Identify the proper methods of controlling pests
• Describe the containers used in plant production
• Analyze the advantages and disadvantages of each type of plant growing container
• Describe the different types of watering methods
• List the advantages and disadvantages of each type of watering system
• Describe the processes of photosynthesis and factors that affect photosynthesis in plants
• Describe the processes of respiration and factors that affect respiration in plants
• Demonstrate basic understanding of education requirements/skills needed for various plant science careers
• Give a basic understanding of olericulture, arboriculture, pomology, agronomy, floriculture, etc. 

(Continued on the following page)
Nursery and Landscape

- Explain the role of the Agriculture Education program and the FFA in personal development
- Demonstrate knowledge learned through a Supervised Agriculture Experience (SAE) program
- Develop leadership and personal development skills through participation in the FFA
- Explore career opportunities in nursery/landscaper through the FFA and Agriculture Education program
- Define and describe the overall structure, scope, and importance of the green industry
- Explore career opportunities in the green industry related to nursery and landscape
- Identify hand and power tools and equipment used in landscape operations
- Demonstrate proper tool and equipment safety procedures in nursery and landscape operations
- Demonstrate proper maintenance and storage for tools and equipment
- Classify plants using horticultural characteristics (i.e., trees, shrubs, vines, groundcovers, etc.)
- Identify plants by their environmental needs (sun/shade, drought tolerant, etc.)
- Identify common landscape and nursery plants by common and scientific names
- Describe soil structural characteristics that affect fertility and plant growth
- Identify types, characteristics, and uses of soil amendments
- Demonstrate soil testing procedures and prescribe treatments based on soil test results
- Explain the importance of preparing beds for planting
- Determine the area of planting sites
- Calculate the amount of fertilizer, lime, and/or other soil amendments needed for the planting site
- Identify equipment used in site analysis and landscape drawing processes
- Assess client and site needs
- Utilize standard landscape drawing practices, including landscape symbols, computer programs, tools, etc.
- Apply the principles of good landscape design
- Select appropriate landscape plant materials

(Continued on the following page)
Specific Standards and Competencies (continued)

Nursery and Landscape (continued)
- Identify and practice correct planting procedures
- Identify and practice mulching applications
- Identify and practice fertilizer applications
- Describe and practice proper pruning techniques
- Calculate the cost of a landscape plan and installation
- Identify landscape pests
- Analyze damage to landscape plants from pests
- Identify different types of management approaches to control pests
- Explain the concepts of integrated pest management
- Explain the relationship between water and plant growth
- Judge types of irrigation systems based on plant needs, effectiveness, feasibility, etc.
- Practice effective watering methods and techniques
- Identify and classify turfgrass species
- Select turf grasses for specific purposes (i.e., athletic fields, golf courses, lawns, shade areas)
- Identify the seasonality of landscape and nursery jobs
Sample Questions

In agriculture, the market is determined by
A. price and consistency  
B. supply and demand  
C. food and raw products  
D. price and quality

Young leaves showing interveinal chlorosis may be deficient in
A. carbon dioxide  
B. sulfur  
C. phosphorus  
D. iron

Customer complaints offer opportunities for
A. the employee to be disciplined  
B. a business to improve service  
C. the employees to know how poor the products are  
D. the customer to find fault with the employees

The term, soil texture, refers to the
A. individual soil particle grouping  
B. acidity and alkalinity of the soil  
C. moisture holding capacity of the soil  
D. size of the particles that make up the soil

The price of a product is the sum of
A. materials, labor, overhead, and profit  
B. materials, labor, insurance, and profit  
C. labor, taxes, profit, and overhead  
D. labor, insurance, materials, and overhead