

## Ornamental Horticulture Criticality Survey - 2015

| 1. Personal Qualities and People Skills  |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| Demonstrate a positive work ethic by coming to work every day on time, a willingness to take direction, and motivation to accomplish the task at hand. | 0            | 4            | 14               | 2.78           | 18             |
| Demonstrate integrity by abiding by workplace policies and laws and demonstrating honesty and reliability.   | 0            | 2            | 16               | 2.89           | 18             |
| Demonstrate teamwork skills by contributing to the success of the team, assisting others, and requesting help when needed.                             | 1            | 5            | 12               | 2.61           | 18             |
| Demonstrate positive self-representation skills by dressing appropriately and using language and manners suitable for the workplace.                   | 0            | 6            | 12               | 2.67           | 18             |
| Demonstrate diversity awareness by working well with all customers and co-workers.   | 1            | 7            | 10               | 2.50           | 18             |
| Demonstrate conflict-resolution skills by negotiating diplomatic solutions to interpersonal and workplace issues.                                      | 3            | 8            | 7                | 2.22           | 18             |
| Demonstrate creativity and resourcefulness by contributing new ideas and working with initiative.  | 8            | 6            | 4                | 1.78           | 18             |
| <i>answered question</i>   |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>0</b>       |

| 2. Professional Knowledge and Skills   |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| Demonstrate effective speaking and listening skills by communicating effectively with customers and employees and following directions.                      | 3            | 5            | 10               | 2.39           | 18             |
| Demonstrate effective reading and writing skills by reading and interpreting workplace documents and writing clearly.  | 2            | 12           | 4                | 2.11           | 18             |
| Demonstrate critical-thinking and problem-solving skills by analyzing and resolving problems that arise in completing assigned tasks.                        | 4            | 8            | 6                | 2.11           | 18             |
| Demonstrate healthy behaviors and safety skills by following safety guidelines and managing personal health.   | 4            | 9            | 5                | 2.06           | 18             |
| Demonstrate understanding of workplace organizations, systems, and climates by identifying "big picture" issues and fulfilling the mission of the workplace. | 5            | 9            | 4                | 1.94           | 18             |
| Demonstrate lifelong-learning skills by continually acquiring new industry-related information and improving professional skills.                            | 6            | 6            | 6                | 2.00           | 18             |

|   |   |   |    |      |           |
|---|---|---|----|------|-----------|
| Demonstrate job acquisition and advancement skills by preparing to apply for a job and seeking promotion.   | 9 | 7 | 2  | 1.61 | 18        |
| Demonstrate time, task, and resource management skills by organizing and implementing a productive plan of work.  | 6 | 7 | 5  | 1.94 | 18        |
| Demonstrate mathematical skills by using mathematical reasoning to accomplish tasks   | 7 | 9 | 2  | 1.72 | 18        |
| Demonstrate customer service skills by identifying and addressing the needs of all customers and providing helpful, courteous, and knowledgeable service. | 4 | 4 | 10 | 2.33 | 18        |
| <i>answered question</i>  |   |   |    |      | <b>18</b> |
| <i>skipped question</i>   |   |   |    |      | <b>0</b>  |

| <b>3. Technology Knowledge and Skills</b>  |                     |                     |                         |                       |                       |
|--|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
| <b>Answer Options</b>  | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| Demonstrate proficiency with job-specific technologies by selecting and safely using technological resources to accomplish work responsibilities in a productive manner. | 6                   | 10                  | 2                       | 1.78                  | 18                    |
| Demonstrate proficiency with information technology by using computers, file management techniques, and software/programs effectively.                                   | 9                   | 5                   | 4                       | 1.72                  | 18                    |
| Demonstrate proper Internet use and security by using the Internet appropriately for work.   | 7                   | 6                   | 5                       | 1.89                  | 18                    |
| Demonstrate proficiency with telecommunications by selecting and using appropriate devices, services, and applications.  | 9                   | 5                   | 4                       | 1.72                  | 18                    |
| <i>answered question</i>   |                     |                     |                         |                       | <b>18</b>             |
| <i>skipped question</i>  |                     |                     |                         |                       | <b>0</b>              |

| <b>CONTENT STANDARD 1.0: SAFETY IN THE ORNAMENTAL HORTICULTURE INDUSTRY</b>     |                     |                     |                         |                       |                       |
|---|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
| <b>Performance Standard 1.1: Safe Work Practices</b>                            |                     |                     |                         |                       |                       |
| <b>Answer Options</b>   | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| 1.1.1 Identify and properly use personal protection equipment.                  | 0                   | 12                  | 6                       | 2.33                  | 18                    |
| 1.1.2 Read, understand and follow label directions and SDS (safety data sheet). | 0                   | 11                  | 7                       | 2.39                  | 18                    |
| 1.1.3 Properly identify common hand tools and power equipment.                  | 3                   | 9                   | 6                       | 2.17                  | 18                    |
| 1.1.4 Safely use common hand tools and power equipment.                         | 3                   | 8                   | 7                       | 2.22                  | 18                    |
| 1.1.5 Complete (EPA) worker protection handler verification card training.      | 11                  | 4                   | 3                       | 1.56                  | 18                    |
| <i>answered question</i>  |                     |                     |                         |                       | <b>18</b>             |
| <i>skipped question</i>   |                     |                     |                         |                       | <b>0</b>              |

| <b>CONTENT STANDARD 2.0: PLANT ANATOMY</b>   |  |  |  |  |  |
|--|--|--|--|--|--|
| <b>Performance Standard 2.1: Plant Cells</b> |  |  |  |  |  |

|                          | Answer Options                                 | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 2.1.1                    | Label the parts of a plant cell.               | 16           | 1            | 1                | 1.17           | 18             |
| 2.1.2                    | Differentiate between a plant and animal cell. | 16           | 1            | 1                | 1.17           | 18             |
| 2.1.3                    | Explain the function of plant cell organelles. | 16           | 2            | 0                | 1.11           | 18             |
| <i>answered question</i> |  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |  |              |              |                  |                | <b>0</b>       |

#### Performance Standard 2.2: Root Anatomy

|                          | Answer Options                                     | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 2.2.1                    | Investigate the functions of roots in plants.      | 14           | 3            | 1                | 1.28           | 18             |
| 2.2.2                    | Identify the parts of a root.                      | 16           | 1            | 1                | 1.17           | 18             |
| 2.2.3                    | Differentiate the two major types of root systems. | 13           | 3            | 2                | 1.39           | 18             |
| 2.2.4                    | Investigate specialized structures in roots.       | 15           | 3            | 0                | 1.17           | 18             |
| 2.2.5                    | Investigate the functions of roots in plants.      | 12           | 6            | 0                | 1.33           | 18             |
| <i>answered question</i> |  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |  |              |              |                  |                | <b>0</b>       |

#### Performance Standard 2.3: Stem Anatomy

|                          | Answer Options                                  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 2.3.1                    | List the functions of a stem.                   | 13           | 4            | 1                | 1.33           | 18             |
| 2.3.2                    | Recognize the external structures of a stem.    | 14           | 3            | 1                | 1.28           | 18             |
| 2.3.3                    | Analyze the internal structures of a stem cell. | 16           | 2            | 0                | 1.11           | 18             |
| 2.3.4                    | Investigate specialized structures in stems.    | 15           | 3            | 0                | 1.17           | 18             |
| <i>answered question</i> |   |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |   |              |              |                  |                | <b>0</b>       |

#### Performance Standard 2.4: Leaf Anatomy

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 2.4.1                    | Name the main parts of a leaf.  | 13           | 5            | 0                | 1.28           | 18             |
| 2.4.2                    | Compare common vein patterns found in leaves.                               | 13           | 5            | 0                | 1.28           | 18             |
| 2.4.3                    | List three functions of a leaf, including photosynthetic energy conversion. | 11           | 5            | 2                | 1.50           | 18             |
| 2.4.4                    | Differentiate major leaf arrangements.                                      | 12           | 6            | 0                | 1.33           | 18             |
| 2.4.5                    | Investigate specialized cell structures in a leaf.                          | 17           | 1            | 0                | 1.06           | 18             |
| <i>answered question</i> |   |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |   |              |              |                  |                | <b>0</b>       |

#### Performance Standard 2.5: Flower Anatomy

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 2.5.1                    | Label and describe the parts of a flower.                   | 15           | 1            | 2                | 1.28           | 18             |
| 2.5.2                    | Summarize the purpose of a flower.                          | 13           | 3            | 2                | 1.39           | 18             |
| 2.5.3                    | Distinguish between different types of flowers.             | 10           | 7            | 1                | 1.50           | 18             |
| 2.5.4                    | Describe the difference between monocot and dicot flowers.  | 14           | 4            | 0                | 1.22           | 18             |
| 2.5.5                    | Diagram the process of plant pollination and fertilization. | 14           | 3            | 1                | 1.28           | 18             |
| <i>answered question</i> |   |              |              |                  |                | <b>18</b>      |

|                         |   |
|-------------------------|---|
| <i>skipped question</i> | 0 |
|-------------------------|---|

| Performance Standard 2.6: Fruit Anatomy                       |              |              |                  |                |                |
|---|--------------|--------------|------------------|----------------|----------------|
| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 2.6.1 Label and describe the parts of a fruit.                | 14           | 3            | 1                | 1.28           | 18             |
| 2.6.2 Identify and distinguish between basic types of fruits. | 13           | 3            | 2                | 1.39           | 18             |
| <i>answered question</i>                                      |              |              |                  |                | 18             |
| <i>skipped question</i>                                       |              |              |                  |                | 0              |

| Performance Standard 2.7: Seed Anatomy                |              |              |                  |                |                |
|---|--------------|--------------|------------------|----------------|----------------|
| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 2.7.1 Identify and list the major parts of a seed.    | 15           | 2            | 1                | 1.22           | 18             |
| 2.7.2 List the function of each major part of a seed. | 15           | 3            | 0                | 1.17           | 18             |
| <i>answered question</i>                              |              |              |                  |                | 18             |
| <i>skipped question</i>                               |              |              |                  |                | 0              |

| CONTENT STANDARD 3.0: PLANT PHYSIOLOGY                      |              |              |                  |                |                |
|---|--------------|--------------|------------------|----------------|----------------|
| Performance Standard 3.1: Energy Conversion in Plants       |              |              |                  |                |                |
| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 3.1.1 Interpret the process of photosynthesis.              | 12           | 2            | 4                | 1.56           | 18             |
| 3.1.2 Interpret the process of respiration.                 | 12           | 4            | 2                | 1.44           | 18             |
| 3.1.3 Compare the process of respiration to photosynthesis. | 13           | 5            | 0                | 1.28           | 18             |
| <i>answered question</i>                                    |              |              |                  |                | 18             |
| <i>skipped question</i>                                     |              |              |                  |                | 0              |

| Performance Standard 3.2: Transport Within a Plant System  |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 3.2.1 Compare the active and passive transport of minerals into and through the root systems to plant nutrition. | 12           | 3            | 3                | 1.50           | 18             |
| 3.2.2 Compare the structure and function of xylem and phloem cells and tissues.                                  | 12           | 2            | 4                | 1.56           | 18             |
| 3.2.3 Describe the process of translocation.   | 12           | 5            | 1                | 1.39           | 18             |
| <i>answered question</i>   |              |              |                  |                | 18             |

| Performance Standard 3.3: Environmental Requirements for Plant Growth                           |              |              |                  |                |                |
|---|--------------|--------------|------------------|----------------|----------------|
| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 3.3.1 Examine the effects of light quality on plant growth (i.e., spectrum, light measurement). | 8            | 8            | 2                | 1.67           | 18             |
| 3.3.2 Examine the effects of water quality on plant growth (i.e., pH, hardness).                | 7            | 8            | 3                | 1.78           | 18             |
| 3.3.3 Examine the effects of temperature on plant growth.                                       | 6            | 9            | 3                | 1.83           | 18             |
| <i>answered question</i>  |              |              |                  |                | 18             |
| <i>skipped question</i>   |              |              |                  |                | 0              |

| Performance Standard 3.4: Plant Growth Regulators |  |  |  |  |  |
|---|--|--|--|--|--|
|---|--|--|--|--|--|

|                          | Answer Options                                       | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 3.4.1                    | Compare the functions of plant hormones.             | 15           | 2            | 1                | 1.22           | 18             |
| 3.4.2                    | Examine commercial uses for plant growth regulators. | 15           | 2            | 1                | 1.22           | 18             |
| <i>answered question</i> |  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |  |              |              |                  |                | <b>0</b>       |

#### Performance Standard 3.5: Plant Tropisms

|                          | Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 3.5.1.                   | Investigate plant tropisms (e.g., photo, thigma or gravi). | 16           | 1            | 1                | 1.17           | 18             |
| <i>answered question</i> |  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |  |              |              |                  |                | <b>0</b>       |

### CONTENT STANDARD 4.0: PLANT IDENTIFICATION SKILLS

#### Performance Standard 4.1: Categorize Plants

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 4.1.1                    | Discuss the classification and naming of plants.  | 12           | 5            | 1                | 1.39           | 18             |
| 4.1.2                    | Distinguish the major groups of plants.   | 7            | 9            | 2                | 1.72           | 18             |
| 4.1.3                    | Correctly categorize common plants by life cycle (i.e., annuals, perennials, etc.).                               | 5            | 5            | 8                | 2.17           | 18             |
| 4.1.4                    | Correctly categorize plants by growth habits (i.e., mounding, trailing, etc.).                                    | 4            | 9            | 5                | 2.06           | 18             |
| 4.1.5                    | Utilize resources to establish plant suitability for a selected site (i.e., Hardiness Zone Maps, Heat Zone Maps). | 5            | 8            | 5                | 2.00           | 18             |
| 4.1.6                    | Identify common plants by botanical and common names.   | 5            | 6            | 7                | 2.11           | 18             |
| <i>answered question</i> |   |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |   |              |              |                  |                | <b>0</b>       |

### CONTENT STANDARD 5.0: GROWING MEDIA

#### Performance Standard 5.1: Soil Texture and Structure

|                          | Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 5.1.1                    | List the components of soil.   | 8            | 6            | 4                | 1.78           | 18             |
| 5.1.2                    | Describe the concept of soil texture and its importance.                                     | 6            | 8            | 4                | 1.89           | 18             |
| 5.1.3                    | Classify the texture of a soil sample.   | 7            | 10           | 1                | 1.67           | 18             |
| 5.1.4                    | Identify various soil structures, their formation, and importance in agriculture production. | 9            | 7            | 2                | 1.61           | 18             |
| <i>answered question</i> |  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |  |              |              |                  |                | <b>0</b>       |

#### Performance Standrd 5.2: Soilless Growing Media

|       | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|-------|---|--------------|--------------|------------------|----------------|----------------|
| 5.2.1 | Identify the components and source of soilless growing media. | 12           | 4            | 1                | 1.35           | 17             |
| 5.2.2 | Describe the functions of growing media.                      | 10           | 6            | 2                | 1.56           | 18             |

|                          |  |    |   |   |      |           |
|--------------------------|--|----|---|---|------|-----------|
| 5.2.3                    | Determine desirable properties of growing media (i.e., drainage, organic matter, micro-organisms). | 10 | 6 | 2 | 1.56 | 18        |
| 5.2.4                    | Evaluate the advantages and disadvantages of soilless media.                                       | 13 | 3 | 2 | 1.39 | 18        |
| <i>answered question</i> |  |    |   |   |      | <b>18</b> |
| <i>skipped question</i>  |  |    |   |   |      | <b>0</b>  |

#### Performance Standard 5.3: Chemical Characteristics of Growing Media

| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|---|--------------|--------------|------------------|----------------|----------------|
| 5.3.1 Test and determine pH level of various growing media.                         | 11           | 6            | 1                | 1.44           | 18             |
| 5.3.2 Interpret pH test results of a growing media sample.                          | 9            | 8            | 1                | 1.56           | 18             |
| 5.3.3 Test and determine the electrical conductivity (EC) of various growing media. | 14           | 4            | 0                | 1.22           | 18             |
| 5.3.4 Interpret EC test results of a growing media sample.                          | 13           | 5            | 0                | 1.28           | 18             |
| 5.3.5 Interpret soil test results and make recommendation accordingly.              | 11           | 5            | 2                | 1.50           | 18             |
| 5.3.6 Analyze the relationship between soil media and nutrient availability.        | 11           | 5            | 2                | 1.50           | 18             |
| <i>answered question</i>  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>   |              |              |                  |                | <b>0</b>       |

#### Performance Standard 5.4: Water-Holding Capacity (WHC)

| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|---|--------------|--------------|------------------|----------------|----------------|
| 5.4.1 Describe water-holding capacity of soils and its relationship to the water cycle. | 8            | 7            | 3                | 1.72           | 18             |
| 5.4.2 Explain what determines a soil's water-holding capacity.                          | 8            | 8            | 2                | 1.67           | 18             |
| <i>answered question</i>  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>   |              |              |                  |                | <b>0</b>       |

### CONTENT STANDARD 6.0: PLANT NUTRITION

#### Performance Standard 6.1: Fertilizer Formulation

| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--|--------------|--------------|------------------|----------------|----------------|
| 6.1.1 Differentiate between macronutrients and micronutrients.                             | 7            | 8            | 3                | 1.78           | 18             |
| 6.1.2 Measure pH and describe how it is modified.  | 6            | 9            | 3                | 1.83           | 18             |
| 6.1.3 Identify the components of a fertilizer and their role in the biochemical cycle.     | 8            | 8            | 2                | 1.67           | 18             |
| 6.1.4 Interpret a fertilizer label.  | 3            | 8            | 7                | 2.22           | 18             |
| 6.1.5 Categorize methods of application (i.e., granular, time released, injector, foliar). | 7            | 8            | 3                | 1.78           | 18             |
| 6.1.6 Evaluate application methods to ornamental crops.                                    | 5            | 11           | 2                | 1.83           | 18             |
| 6.1.7 Develop a fertilizer management plan for an ornamental crop.                         | 7            | 11           | 0                | 1.61           | 18             |
| <i>answered question</i>   |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>0</b>       |

| Performance Standard 6.2: Plant Nutrients                                 |              |              |                  |                |                |
|---|--------------|--------------|------------------|----------------|----------------|
| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 6.2.1 Correlate plant symptoms to the appropriate nutritional deficiency. | 5            | 7            | 6                | 2.06           | 18             |
| 6.2.2 Correlate plant symptoms to the appropriate plant toxicity.         | 5            | 10           | 3                | 1.89           | 18             |
| <i>answered question</i>  |              |              |                  |                | <b>18</b>      |
| <i>skipped question</i>   |              |              |                  |                | <b>0</b>       |

| CONTENT STANDARD 7.0: INTEGRATED PEST MANAGEMENT (IPM) |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Performance Standard 7.1: Integrated Pest Management   |              |              |                  |                |                |
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 7.1.1. Define Integrated Pest Management (IPM).        | 4            | 9            | 4                | 2.00           | 17             |
| 7.1.2. Summarize the benefits of IPM.                  | 4            | 9            | 4                | 2.00           | 17             |
| <i>answered question</i>                               |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>                                |              |              |                  |                | <b>1</b>       |

| Performance Standard 7.2: Common Pests and Diseases                |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 7.2.1 Identify types of plant pests and diseases.                  | 4            | 6            | 7                | 2.18           | 17             |
| 7.2.2 Identify weed, insect, rodent, and fungi pests.              | 4            | 6            | 7                | 2.18           | 17             |
| 7.2.3 Differentiate between infectious and noninfectious diseases. | 4            | 10           | 3                | 1.94           | 17             |
| 7.2.4 Identify abiotic plant injuries.                             | 3            | 12           | 2                | 1.94           | 17             |
| <i>answered question</i>   |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>1</b>       |

| Performance Standard 7.3: Safe Handling, Use, and Storage of Pesticides                        |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 7.3.1 Identify and utilize appropriate safety measures when applying pesticides.               | 5            | 4            | 8                | 2.18           | 17             |
| 7.3.2 Interpret pesticide labels.  | 3            | 5            | 9                | 2.35           | 17             |
| 7.3.3 Explain procedures for storing and disposing of pesticides.                              | 4            | 9            | 4                | 2.00           | 17             |
| 7.3.4 Evaluate environmental and consumer concerns regarding pest management and biodiversity. | 8            | 8            | 1                | 1.59           | 17             |
| 7.3.5 Demonstrate how to mix pesticides according to label directions.                         | 6            | 2            | 9                | 2.18           | 17             |
| 7.3.6 Calibrate common application equipment and calculate application rate.                   | 5            | 5            | 7                | 2.12           | 17             |
| 7.3.7 Explore requirements for obtaining pesticide applicator licenses.                        | 7            | 6            | 4                | 1.82           | 17             |
| <i>answered question</i>   |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>1</b>       |

| CONTENT STANDARD 8.0: PLANT PROPAGATION                           |  |  |  |  |  |
|---|--|--|--|--|--|
| Performance Standard 8.1: Sexual Propagation of Ornamental Plants |  |  |  |  |  |



| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--|--------------|--------------|------------------|----------------|----------------|
| 8.1.1 Compare the difference between sexual and asexual propagation. | 10           | 3            | 4                | 1.65           | 17             |
| 8.1.2 Diagram the process of seed germination.                       | 14           | 2            | 1                | 1.24           | 17             |
| 8.1.3 Identify the conditions needed for seed germination.           | 8            | 6            | 3                | 1.71           | 17             |
| 8.1.4 Compare the methods of seed preparation.                       | 11           | 5            | 1                | 1.41           | 17             |
| 8.1.5 Demonstrate techniques for sowing seeds.                       | 7            | 7            | 3                | 1.76           | 17             |
| 8.1.6 Determine germination percent.                                 | 14           | 2            | 1                | 1.24           | 17             |
| <i>answered question</i>   |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>1</b>       |

#### Performance Standard 8.2: Asexual Propagation of Ornamental Plants

| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--|--------------|--------------|------------------|----------------|----------------|
| 8.2.1 Summarize optimum conditions for asexual propagation.          | 13           | 3            | 1                | 1.29           | 17             |
| 8.2.2 Demonstrate techniques used to propagate plants by cutting.    | 11           | 5            | 1                | 1.41           | 17             |
| 8.2.3 Demonstrate techniques used to propagate plants by division.   | 8            | 8            | 1                | 1.59           | 17             |
| 8.2.4 Demonstrate techniques used to propagate plants by separation. | 8            | 8            | 1                | 1.59           | 17             |
| 8.2.5 Demonstrate techniques used to propagate plants by layering.   | 13           | 3            | 1                | 1.29           | 17             |
| <i>answered question</i>   |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>  |              |              |                  |                | <b>1</b>       |

#### CONTENT STANDARD 9.0: ORNAMENTAL HORTICULTURE CROPS

##### Performance Standard 9.1: Crop Production

| Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|---|--------------|--------------|------------------|----------------|----------------|
| 9.1.1 Plan a growing schedule to maximize the production of a growing facility. | 12           | 5            | 0                | 1.29           | 17             |
| 9.1.2 Utilize best management practices when spacing crops.                     | 8            | 8            | 1                | 1.59           | 17             |
| 9.1.3 Select appropriate containers and medium for a crop.                      | 7            | 9            | 1                | 1.65           | 17             |
| <i>answered question</i>  |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>   |              |              |                  |                | <b>1</b>       |

##### Performance Standard 9.2: Growth Maintenance Procedures

| Answer Options                                      | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|---|--------------|--------------|------------------|----------------|----------------|
| 9.2.1 Compare and contrast hard and soft pinches.   | 11           | 6            | 0                | 1.35           | 17             |
| 9.2.2 Pinch plants using best management practices. | 10           | 7            | 0                | 1.41           | 17             |
| 9.2.3 Examine proper pruning techniques.            | 4            | 5            | 8                | 2.24           | 17             |
| 9.2.4 Demonstrate proper watering techniques.       | 4            | 4            | 9                | 2.29           | 17             |
| 9.2.5 Develop a plant lighting schedule for a crop. | 12           | 4            | 1                | 1.35           | 17             |
| 9.2.6 Develop a fertilizer schedule for a crop.     | 9            | 7            | 1                | 1.53           | 17             |
| <i>answered question</i>                            |              |              |                  |                | <b>17</b>      |
| <i>skipped question</i>                             |              |              |                  |                | <b>1</b>       |



| Performance Standard 9.3: Transplanting                            |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 9.3.1 Identify the proper stage of plant growth for transplanting. | 7            | 5            | 4                | 1.81           | 16             |
| 9.3.2 Select appropriate plants for transplanting.                 | 7            | 6            | 4                | 1.82           | 17             |
| 9.3.3 Demonstrate transplanting procedures to industry standards.  | 5            | 9            | 3                | 1.88           | 17             |
| <i>answered question</i>   |              |              |                  |                | 17             |
| <i>skipped question</i>  |              |              |                  |                | 1              |

| Performance Standard 9.4: Production Standards                         |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 9.4.1 Compare hardening processes                                      | 10           | 4            | 3                | 1.59           | 17             |
| 9.4.2 Prepare plants for sale using best management practices.         | 5            | 10           | 2                | 1.82           | 17             |
| 9.4.3 Examine current industry crop standards (i.e. ANSI, ASNS, NALP). | 8            | 8            | 1                | 1.59           | 17             |
| <i>answered question</i>   |              |              |                  |                | 17             |
| <i>skipped question</i>  |              |              |                  |                | 1              |

| CONTENT STANDARD 10.0: BUSINESS CONCEPTS                   |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Performance Standard 10.1: Basics of Marketing             |              |              |                  |                |                |
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 10.1.1 Compare and contrast advertising methods.           | 16           | 1            | 0                | 1.06           | 17             |
| 10.1.2 Define the purpose for developing a marketing plan. | 13           | 4            | 0                | 1.24           | 17             |
| 10.1.3 Create a business display to a target market.       | 15           | 2            | 0                | 1.12           | 17             |
| <i>answered question</i>                                   |              |              |                  |                | 17             |
| <i>skipped question</i>                                    |              |              |                  |                | 1              |

| Performance Standard 10.2: Principles of Sales   |              |              |                  |                |                |
|--|--------------|--------------|------------------|----------------|----------------|
| Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
| 10.2.1 Compare and contrast the relationship between marketing and selling.                  | 10           | 6            | 1                | 1.47           | 17             |
| 10.2.2 Calculate markup.   | 9            | 5            | 3                | 1.65           | 17             |
| 10.2.3 Complete a sales ticket.  | 7            | 6            | 4                | 1.82           | 17             |
| 10.2.4 Complete a pre-sale and post-sale plant inventory.                                    | 8            | 8            | 1                | 1.59           | 17             |
| 10.2.5 Determine cost of sales.  | 9            | 5            | 3                | 1.65           | 17             |
| 10.2.6 Complete estimates and bids (cost analysis).  | 8            | 7            | 2                | 1.65           | 17             |
| 10.2.7 Identify the characteristics of an effective salesperson, and define related terms.   | 6            | 7            | 4                | 1.88           | 17             |
| 10.2.8 Analyze the customer buying process.  | 7            | 8            | 2                | 1.71           | 17             |
| 10.2.9 Identify the steps involved in the selling process.                                   | 6            | 9            | 2                | 1.76           | 17             |
| 10.2.10 Identify the benefits of different types of sales, including website and e-commerce. | 11           | 5            | 1                | 1.41           | 17             |
| 10.2.11 Assess the basic components and content of a business website.                       | 13           | 4            | 0                | 1.24           | 17             |

|  |                          |    |
|--|--------------------------|----|
|  | <i>answered question</i> | 17 |
|  | <i>skipped question</i>  | 1  |

| <b>CONTENT STANDARD 11.0: PLANT TECHNOLOGIES</b>           |   |                     |                     |                         |                       |                       |
|--|---|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
| <b>Performance Standard 11.1: Selective Plant Breeding</b> |   |                     |                     |                         |                       |                       |
|  | <b>Answer Options</b>   | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| 11.1.1   | Describe the selective plant breeding process.  | 13                  | 2                   | 2                       | 1.35                  | 17                    |
| 11.1.2   | Explain how to estimate the heritability of certain traits.                                       | 13                  | 4                   | 0                       | 1.24                  | 17                    |
| 11.1.3   | Predict the genotypes and phenotypes from monohybrid and dihybrid crosses using a Punnett Square. | 14                  | 2                   | 1                       | 1.24                  | 17                    |
| 11.1.4   | Describe sex determination, linkage, crossover, and mutation.                                     | 13                  | 3                   | 1                       | 1.29                  | 17                    |
| 11.1.5   | Describe how biotechnology tools are used to monitor and direct plant breeding.                   | 11                  | 6                   | 0                       | 1.35                  | 17                    |
| <i>answered question</i>                                   |   |                     |                     |                         |                       | 17                    |
| <i>skipped question</i>                                    |   |                     |                     |                         |                       | 1                     |

| <b>Performance Standard 11.2: Genetic Engineering of Plants</b> |  |                     |                     |                         |                       |                       |
|---|--|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
|   | <b>Answer Options</b>  | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| 11.2.1  | Explain the advantages and disadvantages for genetic manipulation of plants. | 12                  | 3                   | 2                       | 1.41                  | 17                    |
| 11.2.2  | Identify transgenic plants on the market.                                    | 12                  | 5                   | 0                       | 1.29                  | 17                    |
| <i>answered question</i>  |  |                     |                     |                         |                       | 17                    |
| <i>skipped question</i>   |  |                     |                     |                         |                       | 1                     |

| <b>Performance Standard 11.3: Micropropagation Techniques</b> |   |                     |                     |                         |                       |                       |
|---|---|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
|   | <b>Answer Options</b>   | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| 11.3.1  | Define micropropagation and its importance.                   | 12                  | 5                   | 0                       | 1.29                  | 17                    |
| 11.3.2  | Explain applications of micropropagation.                     | 14                  | 3                   | 0                       | 1.18                  | 17                    |
| 11.3.3  | Identify tools and materials for micropropagation procedures. | 15                  | 2                   | 0                       | 1.12                  | 17                    |
| 11.3.4  | Describe procedures used in micropropagation.                 | 14                  | 3                   | 0                       | 1.18                  | 17                    |
| <i>answered question</i>                                      |   |                     |                     |                         |                       | 17                    |
| <i>skipped question</i>                                       |   |                     |                     |                         |                       | 1                     |

| <b>Performance Standard 11.4: Hydroponic Techniques</b> |  |                     |                     |                         |                       |                       |
|---|--|---------------------|---------------------|-------------------------|-----------------------|-----------------------|
|   | <b>Answer Options</b>                                    | <b>Nice to Know</b> | <b>Need to Know</b> | <b>Critical to Know</b> | <b>Rating Average</b> | <b>Response Count</b> |
| 11.4.1  | Define hydroponics and its importance to society.        | 10                  | 7                   | 0                       | 1.41                  | 17                    |
| 11.4.2  | Explain applications of hydroponics.                     | 12                  | 5                   | 0                       | 1.29                  | 17                    |
| 11.4.3  | Describe procedures used in hydroponic plant production. | 12                  | 5                   | 0                       | 1.29                  | 17                    |
| <i>answered question</i>                                |  |                     |                     |                         |                       | 17                    |
| <i>skipped question</i>                                 |  |                     |                     |                         |                       | 1                     |

| <b>CONTENT STANDARD 12.0: ORNAMENTAL DESIGN STANDARDS</b>           |  |  |  |  |  |
|---|--|--|--|--|--|
| <b>Performance Standard 12.1: Principles and Elements of Design</b> |  |  |  |  |  |

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 12.1.1                   | Compare and contrast balance using symmetry, asymmetry, and massing.        | 6            | 6            | 5                | 1.94           | 17             |
| 12.1.2                   | Explain how the principles of dominance and focal point are used in design. | 7            | 7            | 3                | 1.76           | 17             |
| 12.1.3                   | Determine appropriate proportion and scale in a design.                     | 4            | 7            | 6                | 2.12           | 17             |
| 12.1.4                   | Illustrate how to establish rhythm in a design.                             | 11           | 6            | 0                | 1.35           | 17             |
| 12.1.5                   | Discuss relationship of color to emotions/symbolism.                        | 13           | 4            | 0                | 1.24           | 17             |
| 12.1.6                   | Use color, texture, and form to create a desired atmosphere.                | 7            | 7            | 3                | 1.76           | 17             |
| <i>answered question</i> |   |              |              |                  |                | 17             |
| <i>skipped question</i>  |   |              |              |                  |                | 1              |

#### Performance Standard 12.2: Implementation of Principles and Elements of Design

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 12.2.1                   | Create a project using principles and elements of design. | 4            | 8            | 5                | 2.06           | 17             |
| 12.2.2                   | Justify design choices of finished project.               | 5            | 10           | 2                | 1.82           | 17             |
| <i>answered question</i> |   |              |              |                  |                | 17             |
| <i>skipped question</i>  |   |              |              |                  |                | 1              |

#### CONTENT STANDARD 13.0: CAREER OPPORTUNITIES IN ORNAMENTAL HORTICULTURE

##### Performance Standard 13.1: Careers in Ornamental Horticulture

|                          | Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 13.1.1                   | Research potential careers in ornamental horticulture and plant science.               | 4            | 10           | 3                | 1.94           | 17             |
| 13.1.2                   | Demonstrate employability skills for a career in the ornamental horticulture industry. | 4            | 5            | 8                | 2.24           | 17             |
| 13.1.3                   | Research additional industry certifications available.                                 | 4            | 11           | 2                | 1.88           | 17             |
| <i>answered question</i> |  |              |              |                  |                | 17             |
| <i>skipped question</i>  |  |              |              |                  |                | 1              |

#### CONTENT STANDARD 14.0: LEADERSHIP TRAINING THROUGH AGRICULTURAL EDUCATION

##### Performance Standard 14.1: Effective Leadership and Leadership Training

|                          | Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 14.1.1                   | Expand leadership experience by participating in a chapter activity.       | 7            | 8            | 2                | 1.71           | 17             |
| 14.1.2                   | Participate in a career development event at the local level or above.     | 6            | 6            | 5                | 1.94           | 17             |
| 14.1.3                   | Exhibit leadership skills by demonstrating proper parliamentary procedure. | 9            | 7            | 1                | 1.53           | 17             |
| 14.1.4                   | Participate in a speech or presentation activity.                          | 7            | 7            | 3                | 1.76           | 17             |
| <i>answered question</i> |  |              |              |                  |                | 17             |
| <i>skipped question</i>  |  |              |              |                  |                | 1              |

##### Performance Standard 14.2: School and Community Awareness

|                          | Answer Options  | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|---|--------------|--------------|------------------|----------------|----------------|
| 14.2.1.                  | Participate in a school improvement or community development project. | 9            | 6            | 2                | 1.59           | 17             |
| <i>answered question</i> |   |              |              |                  |                | 17             |
| <i>skipped question</i>  |   |              |              |                  |                | 1              |

**CONTENT STANDARD 15.0: SUPERVISED AGRICULTURAL EXPERIENCE (SAE) AND AGRICULTURAL CAREER PREPARATION**

**Performance Standard 15.1: Maintain a Supervised Agricultural Experience**

|                          | Answer Options   | Nice to Know | Need to Know | Critical to Know | Rating Average | Response Count |
|--------------------------|--|--------------|--------------|------------------|----------------|----------------|
| 15.1.1                   | Accurately maintain SAE record books.                                | 12           | 3            | 2                | 1.41           | 17             |
| 15.1.2                   | Investigate the proficiency award areas related to SAE program area. | 13           | 3            | 1                | 1.29           | 17             |
| 15.1.3                   | Actively pursue necessary steps to receive higher degrees in FFA.    | 12           | 4            | 1                | 1.35           | 17             |
| <i>answered question</i> |  |              |              |                  |                | 17             |
| <i>skipped question</i>  |  |              |              |                  |                | 1              |